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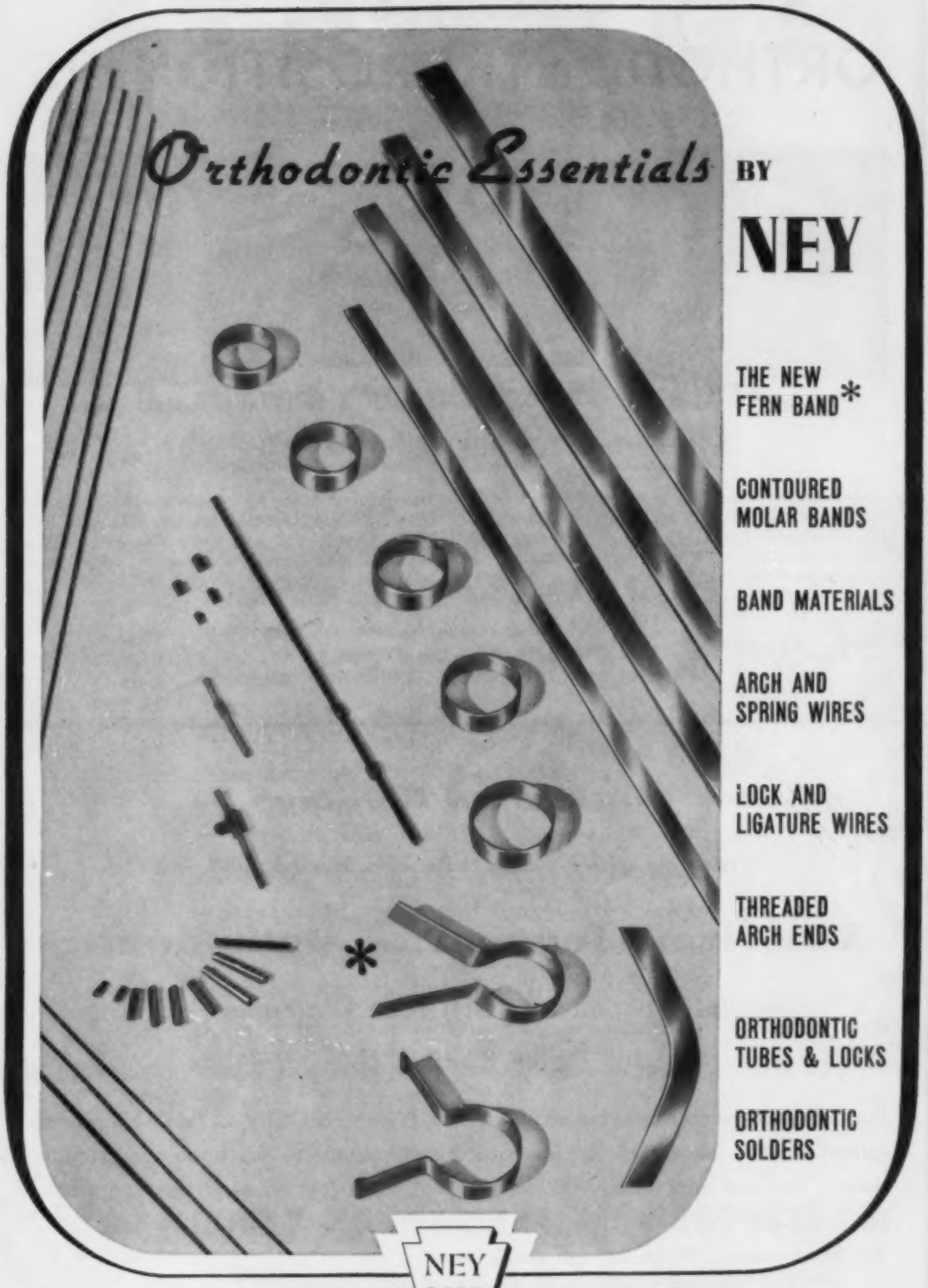

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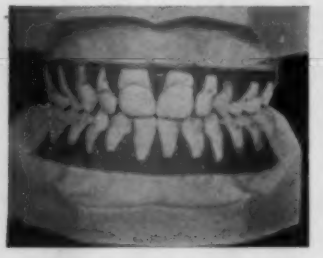

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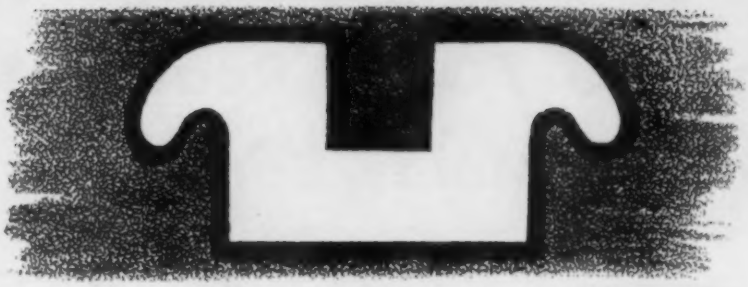

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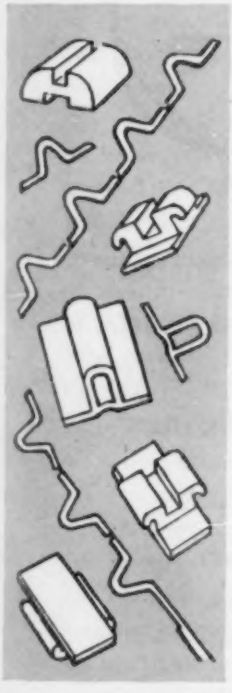

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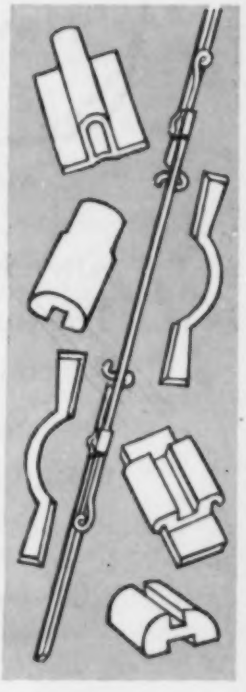

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American Journal
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VOL. 38 JANUARY, 1952 No. 1

REPORT OF THE COMMITTEE ON EDUCATION TO THE BOARD OF DIRECTORS, AMERICAN ASSOCIATION OF ORTHODONTISTS*

AT a meeting of the Board of Directors, held in Colorado Springs, your Committee on Education asked for approval of a plan to canvass the schools of dentistry holding membership in the American Association of Dental Schools for the purpose of preparing a proposed minimum curriculum for graduate and postgraduate study. This was approved.

To this end such curriculum was finished in December, 1946. It was based on over twenty-five years' experience in the teaching of orthodontics. It embraced a whole-time course extending over a period of fifteen months—sixty-five weeks, allowing six weeks' vacation—continuous studentship, totaling 2,300 calendar hours, 1,000 of which are devoted to practical work, and rating fifty academic credits. With this under the *graduate* faculty, it would lead to the M.S. degree. Under the orthodontic department of the dental faculty, it would lead to a "Certificate of Proficiency in Orthodontics" or its equivalent, awarded by the trustees of the university. The total hours and academic credits are practically the equivalent of two years of academic work. A mailing list was obtained from the Secretary of the American Association of Dental Schools and all was ready for the mailing of the questionnaire in October, 1947.

However, the action taken by the Dental Educational Council of the American Dental Association, at its last annual meeting in Boston, August, 1947, made the pursuit of the foregoing plan seem unwise. The Dental Educational Council prescribed courses of two college years for specialization in oral surgery, orthodontics, pedodontics, periodontics, and prosthodontics. While the course which we prepared is the practical equivalent of two academic years, it is the opinion of your Committee that the American Association of Orthodontists should, through its Committee on Education and its teacher members, work with the Dental Educational Council to a satisfactory solution of our vexed problem, not only in post-graduate and graduate courses but in undergraduate and in the so-called refresher and continuation courses under the University Extension Department or of the Dental Faculty.

Presented at the Forty-fourth Annual Meeting of the American Association of Orthodontists, Columbus, Ohio, April 26, 1948. Approved by the Board, April 28, 1948.

The report was prepared by the Chairman based on his personal experience, and was concurred in and signed by the other members of the Committee on Education.

*This appeared in the June, 1948, issue of the JOURNAL and is reprinted here for completion of the material.

Our reason for advocating fifteen or more months of *continuous* work, in contradistinction to two academic years, is based on the demands of the orthodontic clinic. We are convinced, as the result of over a quarter-century of continuous experience as Director of Orthodontics embracing all four phases of the work, that a thorough preparation for practice, teaching, and for research is based upon an adequate experience in the orthodontic *clinic*. The demands here differ from all other clinics in the dental school in that the service must be continuous throughout the entire calendar year, just as in private practice. Orthodontic treatment, to be efficient and safe, cannot be interrupted by four neglected months each year elapsing between the academic years of eight months. And, too, it is important that the patient be given treatment by the same operator through the entire course so that the operator can follow the result obtained by him personally. This is essential to most efficient teaching. Patients treated by different students do not as a rule make as good progress as when one operator concentrates on the treatment and is held responsible for the result.

The curriculum of two academic years proposed by the Dental Educational Council also affects the standards and functioning of our American Board of Orthodontics. This Board has been an official incorporated body under the American Association of Orthodontists for the past nineteen years, has set up high standards, and has certified approximately three hundred diplomates, which means about one-third the membership of our Association. The Dental Educational Council was not ready to accept present standards of the orthodontic board and gave them until 1951 to reach a satisfactory accord. The Council expressed willingness to send a representative to confer with our Committee on Education and the Board of Orthodontics.

Here again the Committee would beg to recommend an understanding approach. The Council undoubtedly has for its purpose the patterning of standards in general on a level as high as those of medicine so that diplomates of the specialties of dentistry may receive hospital or other appointments pertaining to the public health on the same general level. This is most important. We have hope that the Dental Educational Council, when fully appraised of the standards set up and maintained by our specialty board, will be ready to give full consideration. This is so inseparably integrated with our educational problems that here again we feel hopeful that understanding consideration will be accorded our Committee on Education when conferences are arranged for discussion of the special considerations affecting orthodontics that differ from those of the other dental specialties.

At a conference of the Dental Educational Council held in Chicago in February, 1948, we are reliably informed by officers of our Association who were in attendance that we were accused of having been unwilling through the years to help solve the problem of orthodontic education, especially for the undergraduate. We must here go on record.

It has been our good fortune to have been a member of the American Association of Dental Schools and its predecessors from 1900 to 1945. We attended nearly all of its meetings. For quite a number of years we served on its committee on education, taking our turn as chairman, and we here desire to assert

that during all of these years teacher members of our Association repeatedly offered outlines of courses for the undergraduate, graduate, post-graduate, and advocated advanced instruction for orthodontists under University Extension. These reports were published regularly in the annual proceedings of the American Association of Dental Schools and in the *Journal of Dental Education*. The unvarying result of these efforts through all these years was, in general, one of merely passive interest on the part of teachers in the other branches of dentistry, especially the clinical divisions. Lack of time has been the principal excuse but, in our humble opinion, lack of understanding of the orthodontic problem and unwillingness on the part of clinic teachers to cooperate in providing sufficient time for a thoroughgoing orthodontic clinic and their persistent desire for more time for their own work were the real causes behind that. It was impossible to convince the body of the essential importance of adequate clinical training. We insist that it is just as necessary to give thorough *clinical* training for orthodontic practice as it is for operative dentistry, prosthetics, or any of the other clinical branches of dentistry.

That there is not sufficient time for this in the undergraduate curriculum as it has been set up without adding a year or by reducing considerable of the technical and clinical work in other branches is obvious. This latter has been tried in one school but the student electing clinical orthodontics in the undergraduate course was not adequately prepared for general dentistry. And, more important, the remainder of the student body was almost wholly without any orthodontic training. This latter condition exists today in most schools. We reaffirm that the undergraduate student must be given thorough instruction in *prevention* in orthodontics. He should be well taught the *normal* in *growth* and *development*, especially as it pertains to the head, face, and jaws. From this as a basis to reckon, he should be taught to *recognize early* those factors which *predispose* to *malocclusion* and either correct these himself or refer the patient for treatment. By so doing, the general practitioner of dentistry could prevent the necessity for corrective treatment of aggravated and complicated cases in at least 35 to 50 per cent. This would be most helpful in solving treatment for the people.

Because of lack of time in the undergraduate curriculum and also because only a comparatively small percentage of dental students are especially interested in clinical orthodontics, it has been accepted at long last by dental educators that for specialization it is necessary to offer graduate and post-graduate courses. The present pressing demand for these courses is evidence of the need for them.

There is no short cut for a general practitioner of dentistry to prepare himself adequately to do forthright orthodontics except in the field of prevention. If he has decided to do orthodontics, he should be willing to prepare himself properly to give thoroughly good service. We do not subscribe to the commonly made statement that it is the right of the general practitioner to attempt any or all special branches of dental practice upon graduation. Morally he has a right to attempt *only* those branches in which he has adequately pre-

pared himself to render safe and capable service. In attempting treatment beyond his capability, he makes himself culpable. No dental college has ever even pretended to prepare its undergraduate students for any branch of specialization upon graduation any more than is done in undergraduate courses in medicine and surgery. Postgraduate work is necessary in orthodontics, oral surgery, and other specialties, just as surely as it is in surgery and medicine. And any dentist, physician, or surgeon who cannot properly prepare himself should not be allowed by law to hold himself out as competent to specialize. The public, the profession, and especially he himself will ultimately suffer a deserved reward.

The Secretary of the American Association of Dental Schools was asked if a conference for joint discussion might be arranged. He wrote to us in part as follows:

> The Association does not have a Committee on Education. It does have, however, a Committee on Teaching which might serve the purpose which you have in mind. Lloyd E. Blauch, Ph.D., Senior Specialist in Higher Education, U. S. Office of Education, Federal Security Agency, Washington 25, D. C., is Chairman of this Committee and I might say that he is perennially its chairman for I have no doubt the Association will re-elect him to that position just as long as he will accept the responsibility.
>
> Something peculiar has happened among the orthodontic teachers. Two years ago the conference group on orthodontia was asked to prepare a program for the 1946 Meeting, but failed to do so. They were again consulted for 1947 and again there were no results. As a consequence there is not now in the Association and, unfortunately so, a committee or a conference group which is concerned with orthodontia. I am sure that Dr. Blauch has made repeated efforts to have this group become active, but apparently he has not been overly successful in his efforts. I would suggest that it might be well for you to write a letter to Dr. Blauch, for I am sure he could be of considerable help to you.

We wrote to Dr. Blauch under date of April 13, 1948, but so far have received no reply. We are led to believe that he will welcome our cooperation and give us his full assistance as it has been his desire to have orthodontic teaching placed on a sound, workable basis for several years.*

Your Committee has also written to the Secretary of the Dental Educational Council, Dr. Harlan H. Horner. A cordial reply was received. He enclosed a copy of the requirements of the Council for the approval of a specialty board which have been approved by the House of Delegates of the American Dental Association.

Dr. Horner stated that four boards were approved last February, namely, Oral Surgery, pedodontics, Periodontology, and Prosthodontics. He spoke of correspondence and an interview with Dr. deVries last February. He said also,

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*A letter from Dr. Blauch, under date of April 22, 1948, was delivered after we had left for the meeting and was not seen until after our return. He says in part: "The Committee on Teaching, American Association of Dental Schools, of which I am chairman, appointed a committee several years ago to prepare a report on teaching orthodontics to dental students. . . . was made chairman of the committee. For various reasons, . . . has not found it possible to do anything about this matter and therefore no report has been prepared and no conference has been held on this subject.

"We have definitely in mind dealing with this subject before long, and if we find that . . . is not able to handle the matter, we shall appoint another committee."

"After you have looked over the requirements, I shall be glad to hear from you again if I can be of help to clear up any question which still remains in your mind."

We suggest that further correspondence with Dr. Blauch and Dr. Horner be continued.

Recommendation.—That the Committee on Education be instructed by the Board of Directors to arrange for a joint conference between the American Board of Orthodontics, the Dental Educational Council of the American Dental Association and representatives of the American Association of Dental Schools. This should be done at the earliest time convenient to all. We urge that an effort be made to arrange for this at the approaching meeting of the American Association of Dental Schools to be held in Buffalo next June 20-23.

We would consel that the approach be made in a spirit of kindly understanding. It undoubtedly is the purpose of the Dental Educational Council to work out a plan that will result in benefit to all concerned, and a friendly spirit will be most helpful. It will take much work and time, but the solution of this important problem should be diligently pursued until a plan satisfactory to all is worked out.

Respectfully submitted,
GEORGE M. ANDERSON,
WALTER T. MCFALL,
LEUMAN M. WAUGH, Chairman.

Proceedings of the Twenty-sixth Annual Meeting of the American Association of Dental Schools*

at

Chicago, Illinois

June 27, 28, and 29, 1949

FOREWORD

FOLLOWING the submission of the report of the Committee on Education to the Board of Directors of the American Association of Orthodontists at its meeting in Louisville in 1951, there was a general discussion of the work of the Committee during the past three years. It was pointed out that the Committee's reports had dealt largely wtih the activities of the Committee on Orthodontic Teaching of the American Association of Dental Schools, which had been engaged in the task of surveying orthodontic courses in the colleges of dentistry and preparing recommendations for their improvement. The detailed reports of the Committee on Orthodontic Teaching had been published in full in the Proceedings of the Twenty-sixth and Twenty-seventh Annual Meetings of the American Association of Dental Schools, whereas the reports of the Committee on Education of the American Association of Orthodontists had been published in the AMERICAN JOURNAL OF ORTHODONTICS.

It was decided by the Board of Directors that it would be highly desirable to bring all of this material together because, in its present state, it would be largely inaccessible to those most interested in it, namely, the orthodontists. The Chairman of the Committee on Education was directed, therefore, to determine whether the material could be reprinted in a single volume of the *Journal of Dental Education* and made available to the members of the American Association of Orthodontists, or, failing this, if permission could be obtained to reprint it in the AMERICAN JOURNAL OF ORTHODONTICS.

Consultation with Dr. Marion W. McCrea, Secretary-Treasurer of the American Association of Dental Schools, revealed that the cost of the project could not be borne by the schools' association, but permission was given to the American Association of Orthodontists to undertake it provided that reprints could be purchased by the American Association of Dental Schools.

The ensuing pages contain the collected reports and papers reprinted from the *Transactions of the American Association of Dental Schools,* volume 26 (1949) and volume 27 (1950).

A. G. B.

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*This material is reprinted from Volume 26 of the Proceedings of the American Association of Dental Schools.

THE TEACHING OF ORTHODONTICS

An Historical Introduction

Allan G. Brodie, D.D.S., Ph.D.

WHETHER because of sun spots, economics or an awakened realization of neglect there has developed recently a widespread interest in orthodontic education on the part of a number of groups that previously had shown either a complete disinterest or a disdain for the subject. Although papers on the question have appeared with monotonous regularity it was not until demand began to exceed supply that any real concern was noticeable.

The American Association of Orthodontists at its meeting in Columbus, Ohio, in April, 1948, was the first to make an official move. The report of its Committee on Education took the form of an indictment of the dental schools for neglect of the field, and the succeeding committee was charged with the task of investigating the causes. About one month later, at the annual meeting of the American Association of Dental Schools, a committee was formed to develop a report on the teaching of orthodontics in colleges of dentistry with recommendations for its improvement. The procedure followed by this committee conformed with that established by precedent and consisted of obtaining information by means of questionnaires. This information will be given in a subsequent paper by the Chairman, Dr. Moore. The task of setting the stage was left to me on the flimsy excuse that I am an orthodontist, a teacher of orthodontics, and the administrative head of a dental school. To aid me, I was given the questionnaire sheets containing the answers to the first question: "Please give a brief historical sketch of the undergraduate orthodontic teaching program in your school with emphasis on changes in policy and objective."

The committee purposely requested that the questionnaires be completed independently by the dean and the director of orthodontics. Our thought was to obtain clues to any areas of disagreement between the administration and the orthodontic department. We felt that such areas existed and wished to bring them into the open for discussion; but the replies, when made separately, failed to reveal them.

Without going into details, many of which will be discussed by Dr. Moore, one gets the idea that there has been a rather typical pattern of development in undergraduate orthodontic courses in most schools. Technical courses came first. These consisted of laboratory exercises in impression taking, model making, filing, free-hand soldering and the making of simple appliance. As more time was made available for the subject, clinics were started, the student was assigned patients, and lectures were given—these were apparently few and far between.

One can read between the lines that the clinical experience was a sad one. Some of the schools at a rather early date made clinical participation by the student a matter of option and many went to the demonstration method of instruction. Nearly all of them, however, have continued their technical courses down to the present.

Today there is apparently less uniformity of opinion than ever before in everything except the matter of the clinic. The great majority now believe the clinic to be undesirable and are giving more attention to the lecture courses, particularly those on growth and development. That there is a general dissatisfaction is apparent by the demand for the present survey and by the frequently expressed opinion that the undergraduate should be better prepared in orthodontics if the present increased demand for such services is to be met. This situation would seem to indicate the necessity of determining the reasons for failure of the programs of the past.

We have become accustomed to thinking that orthodontia came into existence around the turn of the century. However, it is a matter of history that the regulating of the occlusion by mechanical means goes back at least to the days of Fauchard and that many men have contributed ideas to the field from his time onward.

From the standpoint of mechanics there are but seven movements of the tooth that can be induced. It can be moved mesially, distally, bucally or lingually; it can be elevated, depressed or rotated. To accomplish these movements there are available the fundamental machines, viz.: the inclined plane, the screw, the lever, the wheel and axle, the pulley and the wedge. All of these, singly and in combination, had been advanced by various men for the purpose of moving teeth, prior to 1887 when Angle presented his report on the "Angle System" before the Ninth International Medical Congress. Prior to this time it had been necessary for the dentist to design and fabricate an appliance for each case he wished to treat. The Angle System was nothing more than a collection of prefabricated parts which could be purchased and which, in various combinations, could be employed in the majority of conditions encountered in the treatment of malocclusions. Strangely enough, the advantages possessed by such a system were all but lost sight of in the bitter controversies that arose over the matter of priorities. The personal and professional enmities that had their beginnings at that time were to play a very large part in the subsequent history, not only of orthodontics but also of its relation to dentistry. This was the beginning of the development of various schools of thought in orthodontia which were to bring about not only confusion but the very remarkable progress that such rivalry sometimes engenders.

By 1890 there was some effort to include orthodontics in the dental curriculum, not as a distinct department but usually as a division of prosthetic dentistry. Even before that time, in 1885 to be exact, Angle began to teach at Minnesota, where he continued until 1892. Moving to St. Louis in that year he began to teach at Northwestern; by 1897 he was teaching at the Marion Sims Medical College and at Washington University in St. Louis. In each place he failed completely to interest either the faculty or the students in what he had to offer. Finally, in 1899, he gave up all university affiliations, more in disgust than in despair. He never had much respect for dental schools or for dental education after that, and the final labors of his life, extending through some twenty-five years, were devoted to efforts aimed at the complete divorce of orthodontia from dentistry.

Those early experiences of Angle might easily be laid at the door of a temperamental personality, which he certainly possessed, were it not for the fact that they were so similar to those of other men who have sought to teach this subject in colleges of dentistry. In severing his connections with the schools, Angle made the statement: "If orthodontia is to make any material progress, a separate school entirely independent of dental schools, must be formed, which would amply provide opportunity for those with aptitude and liking for the subject to study in a broad, thorough and comprehensive manner." In view of these words it is enlightening to examine the course of study he organized for men who wished to study under him.

Angle's first independent venture in education was made in St. Louis in 1900. The year previous he had announced his Classification of Malocclusion, an event now quite generally accepted as marking the elevation of the field to the status of a science. It marked, in Angle's development, the attainment of a concept upon which a science could be built and he took immediate advantage of it. Gathering around him a small group of young men he poured out his enthusiasm and shared his knowledge. This teaching program was the true beginning of the field that has come to be known as orthodontia, or orthodontics, and it should be noted that it was based not on mechanical principles but upon a solid biological foundation—the laws of normal dental occlusion.

With those who were not personally acquainted with him, Angle's name is associated with appliances and appliance systems. That he was a perfectionist in techniques and appliance design none of his students would deny, but the attention paid to this aspect of his work has all but obscured the fact that he was one of the greatest thinkers in biology that dentistry has produced. To his students Angle was not the great mechanic but rather the rare teacher who could enforce disciplined learning in all fields that might have a bearing on his own. One has only to scrutinize a list of his early graduates to realize the contributions they have made to dental science. This was the flame that kindled fires such as Grünberg, Kelsey, A. L. Johnson, Ketcham, Mershon, Noyes, Oppenheim, Weinberger and Hellman.

The first course given in the Angle School was of but few weeks' duration but it was gradually increased to a full calendar year. Of even greater significance are the changes that were rapidly made in the content of the course. He came to require preliminary examinations in dental histology, and in anatomy of the head and neck, with special emphasis on the jaws, teeth, nose and throat. He added to his staff recognized teachers in zoology, anatomy, histology, comparative anatomy, rhinology and art. More than one applicant was sent back to undergraduate school for a review of basic science courses before Angle would accept him for orthodontic training.

At this point it might be wise to pause and examine the reasons behind the shift in emphasis that characterized the orthodontic training program as compared to the dental course of study of that day. The dentist, then as well as now, could work his will with chisel, excavator and bur on structures that are relatively inert. The development of a high degree of manual dexterity and a

good mechanical sense would insure his success in practice. The dentist turned orthodontist quickly found that the most exquisite of technics were valueless unless they conformed to the demands of the living body. He found that he had to work by persuasion and in order to do so successfully he must understand the life processes of the tissues with which he dealt, their growth and their responses. Above all, he must have ever before him a knowledge of the normal in all its changing phases. These were the needs that dictated the course of study of the orthodontist as laid out by Angle years ago. That his opinions were and are shared by many is borne out by an examination of most orthodontic textbooks of that day and of the present. Unlike the books in such fields as operative or prosthetic dentistry and crown and bridge, where one finds little but technical and mechanical details, texts on orthodontia will be found to contain significant amounts of space in chapters on applied anatomy, embryology, histology, anthropometrics and genetics, not to mention etiology, diagnosis and methods of physical appraisal.

Unfortunately, very few of Angle's graduates went into dental education. Influenced no doubt by his discouragement they found it easy to turn to the untroubled and lucrative field of private practice. Their contributions were made to their own and allied fields, while dentistry went its way largely ignorant of their labors. This trend was strengthened by the establishment, in 1907, of a special journal, *The American Orthodontist;* from that time onward articles on orthodontics became rare in dental journals. It would be very enlightening to many dental teachers and administrators of today to glance through the volumes of that first journal and note the type of material that claimed the interest of orthodontic readers.

But the success of the early Angle graduates did not go unnoticed and more and more men applied for training. Since this demand could not be met by Angle alone, other schools sprang up to meet it. Few, if any of these, had the background to offer the work; and they were not always strict in such matters as preliminary preparation, course content or the numbers accepted for training. Adequately trained men soon found themselves constituting a very small minority; they formed small societies, membership in which was jealously guarded. This isolationism created a great deal of ill feeling and, combined with the heated controversies that seem to characterize all new ventures, caused further schisms in the specialty that are only now closing.

It was during this time and in this atmosphere that the dental schools began to add orthodontics to their curricula. Few schools had success in attracting outstanding men as teachers and in those cases where they did succeed the appointees quickly sensed the impossibility of giving adequate training in the subject. Faced with the competition of other clinical subjects for the student's time, they were forced to content themselves with giving lectures on theory and exhorting the student not to attempt orthodontic treatment without further training. That they succeeded in the latter effort was indicated by the fact that in the areas of the country influenced by these schools, the general practitioner who accepted orthodontic cases was looked upon as just one step removed from the quack.

With the exception of these few, the men who guided the destinies of those early undergraduate orthodontic efforts in the dental schools had enjoyed little training and that mainly of a mechanical nature. But it was those men, who, ignorant of the orthodontic concept themselves, gave the dental profession its ideas of what constitutes the field. I know of one who consistently taught his students that orthodontia was only a racket and that the man who referred a case out of his office was just sending out money he could well keep for himself.

The clinic played an important part in the early undergraduate orthodontic course. Here students, with no preparation other than a little bench work, placed appliances and tightened wires under very casual supervision. Cases were never finished but handed on from generation to generation of students until the victims' patience and tissues were exhausted and they quit. Under these circumstances the student came to look upon orthodontics as a racket and carried that impression into practice with him.

As a result of these conditions orthodontics became the joke of the dental school and leaders in the orthodontic world shunned teaching. Dr. F. B. Noyes recalls one occasion when one of the dental schools' associations was meeting and the dean of the local dental school conducted those in attendance through his school. He waxed enthusiastic over his operative department and pointed out all of the ingenious devices in his prosthetic department. Then, going to the entrance of the next room, he said, "Gentlemen—this is the department of orthodontia—enough said." And all of the visiting deans nodded in sympathy.

This attitude should cause no wonder because until relatively recently good orthodontia was not the general thing. For forty or fifty years, however, there have been orthodontists in this country whose work would excite the admiration of the most critical dentist. But they were in a small minority, their work was not widely known and the dental profession, quite naturally, formed its judgments largely from what it saw in the colleges and from its observations of the work of the poorly trained majority.

Ten or fifteen years ago statements of this sort could not have been made publicly, but with most of the active orthodontic leaders of those days now off the scene the picture has changed. The rifts are closing rapidly and while we still have schools of thought that differ, and I hope we always shall have, they at least speak and exchange ideas with each other on a cordial basis. The American Association of Orthodontists embraces all schools of thought; yet when a stronger statement than the one I have just made was presented recently before one of its larger constituent groups and subsequently before the Board of Directors of the Society itself there was not a voice raised in protest. To the contrary, it was urged that this analysis be presented to you.

While the conditions to which I have referred were developing in the dental schools, there were significant changes occurring in the field of orthodontics itself. The chief source of supply of orthodontists had always been the private school and most of these, suffering from adverse criticism from within the specialty itself, began to languish. Angle, although still facing a heavy demand, ceased teaching in 1925 in order to direct all of his energies toward divorcing orthodontics from dentistry.

Certain of the dental schools, finally accepting a dictum that an orthodontist could not be trained at the undergraduate level and faced with a demand for this training, turned to postgraduate work as a solution. Unfortunately, expediency governed most of these efforts. For the most part they built their programs around staffs that had been conditioned to the failure of undergraduate teaching, and their postgraduate offerings differed from the undergraduate only in name and in length. The result was a perpetuation of most of the evils of the proprietary schools, but these were now cloaked with university sanction. Worse than this they became sources of great income for some of the schools—always undersupported. One such department boasted of an annual income of $40,000, another of $60,000. Everyone who could afford to pay was accepted for treatment, and a clientele of five to six hundred patients was not unusual. These were assigned in groups of forty or more to each student as soon as he entered the course and the theory of "learn by doing" was invoked.

Finally the seriousness of the situation began to impress itself on a few members of the orthodontic fraternity. With the private schools all but out of the picture and the dental schools making such a farce of orthodontic training at even the postgraduate level there seemed but one possible escape—the graduate school. Here teaching would be under the discipline of men who at least were scholars. They might not be physicians or dentists but they would be able to recognize sound educational principles and adequately controlled research. In a few institutions orthodontia petitioned for and was granted recognition as a graduate field of study, on a par with other divisions of science. These circumstances bring our history down to the present day. For the second time orthodontia has withdrawn from the administration of the dental school.

It is not the purpose of this paper to attempt to place blame on individuals or institutions. The long continuing controversies that have characterized orthodontic history until recently, a general misunderstanding of the problem on the part of the dental profession and faculties, and the forces of expediency have all contributed to the present conditions. The effort we are making here today is aimed at finding a solution to a problem that thus far has proved insoluble, namely, the training of the undergraduate in orthodontics. If we are to be successful, we must face certain facts.

The first of these is that the department of orthodontics will no longer be content with a mere token recognition of its presence in the college of dentistry. If it is to be expected to train general practitioners to a level where they can be trusted to do even some orthodontic treatment it will have to be granted considerably more time in the curriculum. Under present circumstances there is a rather general impression that the orthodontic staff is withholding information to protect its own economic interests whereas the truth of the matter is that most orthodontic teachers are aware of the disastrous results of a superficial treatment of the subject.

The average orthodontist has a quiet laugh when he hears that general practitioners should be trained to treat the simple cases. He knows from his

own experience that the outward appearance of a malocclusion gives no clue to the untrained of the difficulties its treatment may present. And when he hears about the use of simple appliances for simple derangements his chuckles become more audible because he knows full well that the successful use of such devices depends more on fundamental knowledge of the growth and reactions of the denture than on a knowledge of mechanics.

I am aware of the difficulties caused by increasing the time allotment for any subject. It means that a choice must be made between taking time from other subjects or increasing the time allotted to a specific course. The University of California has demonstrated beyond question that the undergraduate can be trained thoroughly in orthodontics. However, it must be pointed out that the teaching does not concern the entire student body, but only a small and carefully screened group. Is there any way open that might make it possible to reach the average undergraduate or must we accept the decision that the dental course must be lengthened? This last seems impossible in the face of the present demand for more dentists.

Even were we to admit that there is no way save the present program of graduate or postgraduate work, certain changes are indicated in the undergraduate dental course. In every other field of education undergraduate work forms an indispensable foundation for advanced work but not in orthodontia. As a graduate teacher I would just as soon, or indeed rather, have a student prepared in biological sciences in a good liberal arts college or a college of medicine than a student prepared in a dental school. The techniques of orthodontia are easily and quickly taught, but the concepts upon which scientific orthodontia stands are those derived from fundamental biological sciences. These the average dental graduate does not have. He comes to his graduate work technically trained in procedures based largely on empiricism and without thorough training in such fundamental aspects as the normal occlusion of the teeth, the anatomy and physiology of the human denture and the changes produced by the aging processes. These are the very bedrocks of orthodontia. I believe that most modern dental educators will agree that they should be the bedrocks of scientific dentistry as well. This understanding is borne out by remarks made by almost all graduate orthodontic students as they approach the end of their training. "If now there were no such field as orthodontia and I were returning to the practice of general dentistry, I think I would know how to practice it intelligently and scientifically."

It should be noted that this is the reaction of men who have taken their orthodontic training after undergraduate work in dentistry. It would seem to point up the wide divergence between the dentist and the dental educator on the one hand and the orthodontist and the orthodontic teacher on the other. The dental educator, viewing the unquestioned superiority of his product, the American Dentist, in most phases of dental endeavor, cannot believe that the course of training that has led to this preeminence is not as good a preparation for orthodontia as it is, say, for advanced work in crown and bridge prosthesis. He views orthodontia as only a series of technics and the orthodontist as an

artful dodger who, to protect his "racket," gives lip service to the biological sciences. The orthodontist, on the other hand, viewing the time consumed by technical exercises and practice in the average dental school, together with the lack of teachers to offer anything of a basic nature, shrugs his shoulders (more in relief than resignation, I suspect) and decides that the obstacles in the way of any pronounced change are so great that they cannot be overcome.

But the picture does not present the complete stalemate that it seemed to only a few years ago. The colleges of dentistry are showing unmistakably that they have a greater interest in scholarship today than ever before. Beginning thirty years ago there has been a continuing effort to give the dental student a foundation in the biological sciences essentially equal to that of the medical student. We have witnessed over this time a doubling of the period of training; the major portion of this additional time has been devoted to a study of those sciences. Unfortunately this change has been instituted in the naive belief that a student has only to be exposed to biological subjects to become biologically minded. Little attention has been paid to the environment in which he receives this instruction, an environment in which he senses no interest on the part of his dental teachers and one in which he is all too frequently "talked down to" by his medical instructors. His confusion has been augmented in the course of learning his technical and clinical procedures by instructors who have implied, if they have not actually stated, that he will earn his living by doing things with his hands and not by wasting his time worrying over theories. For a number of years many of the schools have made serious attempts to obtain teachers who are not recent graduates of their own or of another dental school. This tendency is accelerating rapidly. The schools are coming to realize that it is not sufficient merely to expose a student to a biological science, even under a well-trained teacher, without providing a correlating factor in the form of a dental teacher who has had advanced work in that science. Many of our most pressing problems could be solved almost over night with a good supply of well-trained teachers, teachers who had either preceded or followed their dental training with advanced work in some special field.

I should like to make it clear that I do not believe that present conditions can be altered by edicts, no matter how worthy the motives behind them. I do not believe that we can suddenly begin to train orthodontists at the undergraduate level, even if time were made available; because we do not have sufficient trained personnel. Nor do I wish to leave the impression with you that the orthodontist feels that the biological sciences are his prerogatives and that he and he alone is responsible for their teaching and application.

What seems to be necessary is a gradual revision of the curriculum with increasing emphasis on the dental apparatus as a living, growing and changing organ to replace the more or less static concept that is still prevalent. Only when we approach our educational problem with this objective in mind shall we be able to make effective progress against the alarming proportions of dental disease. It is suggested that a step in this direction could be taken if a study were to be made of what orthodontics has to offer to the understanding of general dental problems.

President Rinehart: The paper that Dr. Moore will give is in the form of an abstract of the tentative report prepared by the Committee on Undergraduate Orthodontic Teachings. This Committee is composed of Dr. Allan G. Brodie, Dr. G. Vernon Fisk, Dr. Samuel Hemley, Dr. Lester B. Higley, Dr. Thomas D. Speidel, Dr. Wendell L. Wylie, and Dr. George R. Moore, Chairman.

TEACHING ORTHODONTICS TO UNDERGRADUATE DENTAL STUDENTS

GEORGE R. MOORE, D.D.S., M.S.

The Curriculum Survey Committee's 1935 report contains the following statement:

> The significance of orthodontics in all dental health service, the apparent inability of specialists in orthodontics to make the service available to the masses of the people, and the opinions of progressive dentists make it appear that many general dental practitioners in the future should assume the responsibility to render orthodontic service and that consequently the dental schools should prepare them to meet this obligation. This service should include advisory and preventive service and the correction of the simpler cases of malocclusion.

The April, 1948 report of the American Association of Orthodontists' Education Committee has this statement:

> The unvarying result of these efforts through all these years (1900 to 1945) was, in general, one of merely passive interest on the part of the teachers in the other branches of dentistry, especially the clinical divisions. Lack of time has been the principal excuse but, in our humble opinion, lack of understanding of the orthodontic problem and unwillingness on the part of clinic teachers to cooperate in providing sufficient time for a thoroughgoing orthodontic clinic and their persistent desire for more time for their own work were the real causes behind that. It was impossible to convince the body (American Association of Dental Schools) of the essential importance of adequate clinical training. We insist that it is just as necessary to give thorough clinical training for orthodontic practice as it is for operative dentistry, prosthetics, or any of the other clinical branches of dentistry. . . . There is no short cut for a general practitioner of dentistry to prepare himself adequately to do forthright orthodontics except in the field of prevention.

In these reports we see on the one hand the Curriculum Survey Committee's considered recommendation that dental schools prepare undergraduates to provide advisory and preventive service along with the actual correction of the simpler cases of malocclusion; while on the other hand we find fourteen years later the orthodontists' equally considered statement that the present dental curriculum affords time for adequate orthodontic training in prevention only.

With opinions running at such wide variance about the teaching of a subject whose importance as a health service has come to be fully recognized, there is little wonder that deans and administrators have in recent years been pressing for a study such as this one. In spite of what appeared to be a wide interest, our questionnaire of ten questions was mailed to deans and orthodontic department heads with no thought of receiving replies from all. However, replies were received from all of the 45 dental schools of Canada and the United States. Twenty-five, or 56 per cent, of the deans and 43, or 96 per cent, of the ortho-

dontic department heads made up the total of 68, or 76 per cent, of the 90 replies which would have constituted a 100 per cent response from all individuals who received the questionnaire.

The tentative report of the committee which has been distributed among you which you have just heard, outlining the evolution of orthodontic teaching to the present date, to report the current status of the teaching of orthodontics in dental schools, and to make recommendations for improvement in handling the subject.

The tentative report of the committee which has been distributed among you contains an analysis of the questionnaire replies. In the present abstract it is our aim simply to cover controversial points as a stimulus to discussion during this afternoon's meeting.

Current Status

Objectives

The replies show the greatest concentration of interest around the possible inclusion of clinical training in the curriculum. Thirty-one either now include or wish soon to include a practical course in prevention of malocclusion; of these, 20 wish to require it. Twenty-six either now include or wish soon to include a course in clinical treatment of the less complicated cases of malocclusion; 17 wish to require it.

Hours of Instruction

Of the 45 schools, 2 failed to give information about the hours devoted to the teaching of orthodontics. The studies relating to hours and the specific time when this subject is taught are therefore limited to 43 schools. While this survey carefully presents the information available, there are some minor discrepancies from the true facts because, in a few instances, the responses were so vague that it was necessary to approximate the hours. In every instance where this estimation was necessary an effort was made to assign a greater rather than a fewer number of hours.

The study reveals the fact that there is little uniformity in the undergraduate courses in orthodontics given in the various dental schools. The time allotted for the average student is from 14 to 314 hours of the total of 4,400 hours in the dental course. It would appear, at least so far as the enumeration of the headings under which this subject matter is taught, that there is close similarity in the content of the didactic course. There is, however, a wide variation in the number of hours devoted to this subject matter, ranging from 14 to 112.

With regard to laboratory work, there are extreme variations: from as little as nothing in 7 schools, to as much as 180 hours in another. There is wide variation as to the content of the laboratory course. Included under this heading we find dissection, taking impressions and making casts, making space maintainers, freehand soldering, and the construction of orthodontic appliances. These appliances include the simple labial arch wire, the labial and lingual arch wires, the twin arch, and the edgewise arch.

In the hours designated as clinical, there is a range of from 0 to 192 hours. One school reports that it is possible for an unusually capable student to spend as much as 500 hours. Under the heading of "clinical" are grouped hours which are spent in the clinic or which merely refer to work of a clinical nature. In some schools they may represent only observation, while in others treatment by the student is required.

Of the 45 schools, only 26 reported a student-teacher ratio. In these, this ratio runs from as few as 2 or 3 students per teacher to as many as 35 per teacher.

Areas of Agreement

There are so many variations that the analysis thus far presented, would tend to create the impression that there are few areas of agreement. It is important, therefore, to determine to what extent agreement exists in the various aspects of the undergraduate course in orthodontics.

1. There is considerable similarity in the content of the didactic course in orthodontics. Many of the schools listed an outline of the objectives in the didactic course. While slightly different language was used by the several schools, most of them used essentially the following headings, which are listed according to the frequency of occurrence: Growth and Development—Etiology —Analysis of Malocclusion and Classification of Malocclusion—Diagnosis—requisites of Orthodontic Appliances and an Analysis of Them—Physiology of Muscle and Myofunctional Therapy—Forces of Occlusion—Tissue Response—History course at all. Of the schools that give laboratory courses, 23 devote from Patients—Time to Treat—Orthodontist and His Relations to the General Practitioner—Prevention of Malocclusion.

2. Of the time allotted to the didactic course, 48 hours is the median. This figure is not significant because only 6 schools are wholly in agreement. There are 24 schools out of the total of 43 which devote from 28 to 66 hours.

3. With regard to the laboratory course there would appear to be an extreme diversity of opinion. However, it should be noted that 7 schools (16 per cent) are in absolute agreement in both the content of the course and the number of hours which should be devoted to it: they do not give any laboratory course at all. Of the schools that give laboratory courses, 23 devote from 28 to 64 hours to the course. In these schools most of the laboratory hours are spent on such procedures as taking impressions, making casts, and free-hand soldering. Fourteen of them require the students to make some sort of appliance; 9 do not.

4. The clinical course shows not only the greatest divergence of opinion but also the greatest extent of agreement. Thirty-nine and one half per cent of the schools have no clinical hours; therefore, they agree as to both the content and the time which should be devoted to this phase of the course. Thirteen of the schools devote from 10 to 50 hours to the clinical phase. Eleven of these 13 use their clinical time for observation only.

Patterns of Present Activity

The variety of activities in the orthodontic courses of the 45 schools makes it difficult to detect any general pattern in their teaching. It is true that every

school offers a more or less extensive course of lectures in orthodontics; the majority (37 of the 45) have an orthodontic laboratory course; and the majority (37 of the 45) carry on some type of clinical activity, either a demonstration or a student work clinic.

The findings show that 4 schools offer lectures only. In 4 schools the course is composed of lectures and laboratory work. Three schools have lectures and demonstrations. Twelve have lectures, laboratory, and demonstrations. Eleven have lectures, laboratory, demonstrations, and clinic. Ten have lectures, laboratory and clinic. One has lecture, demonstrations, and clinic. The statements made by the teachers of these courses indicate certain general conditions:

1. It should be realized that the total amount of time devoted to these courses is small when compared to time allotments to other phases of clinical dentistry. Therefore, it is obvious that none of the schools makes a serious effort to teach the theory and practice of orthodontics to undergraduate dental students. (The partial exception is the Curriculum II of the University of California. This is called a partial exception because it is open only to a limited and select group of each class. Reports indicate that the quality of its training is noteworthy.)

2. It appears that most of the orthodontic courses devote a considerable share of the lecture and demonstration time to content that is basic not only to orthodontics but to most of the other clinical dental courses. The growth changes in the head, face, jaws, and teeth (the fundamentals of occlusion) occupy a prominent part of the orthodontic courses of many schools. Thus, it is evident that the orthodontic courses are contributing to the basic concepts of the undergraduate students. However, the accomplishment of this worthwhile goal leaves only a small amount of time in which to teach the application of this knowledge in corrective and preventive orthodontic work. Nevertheless, teachers of orthodontics probably will continue teaching applied anatomy and physiology of the masticatory area because their students come to them without this knowledge which is fundamental to the study of orthodontics and should be a part of the armamentarium of all dentists.

3. The majority of the laboratory courses devote considerable time to impression and model making, techniques traditionally considered orthodontic but actually procedures used in many phases of dentistry, especially in partial denture prosthesis. Such duplicity is further evidence that most of the laboratory courses provide a very limited experience in orthodontic techniques.

4. Almost all clinical courses are limited. The clinical activities range from elective observation courses to courses in which students are expected to have two treatment cases and two or three simple or palliative or observation cases. In some schools, junior students observe the clinical activities of senior students; in some schools the undergraduates observe the work of postgraduate students; in some schools senior students observe the clinical work of staff members; in some schools students care for patients, usually of selected types and limited number, under staff observations. These variations demonstrate the restricted opportunities for applying clinically what is learned in the lecture

and laboratory courses. It is easy to understand the reasons that 8 chools have discontinued the requirement of laboratory work for their undergraduates, that 8 schools have no clinical orthodontic work, and that 15 schools offer only clinic demonstration courses.

This Committee feels that the variety of courses is not in itself disturbing, and has no thought of urging a uniform program, just for the sake of uniformity. It is urged, however, that the schools examine their present programs of instruction with a view to determining: (1) whether the present objectives of their courses are the right ones, and (2) whether the objectives are being achieved.

DIFFICULTIES

Forty-five schools were asked to submit reports from both the dean of the faculty and the orthodontic department head. Of the possible 90 reports, 22 were not returned and 4 were incomplete and could not be used.

The difficulties most often presented can be grouped under 5 main headings: faculty, time, student interest, physical equipment, and finance. It is the opinion of the Committee that the solutions of these problems will come only with eventual recognition of the integral place which orthodontics should occupy in the undergraduate curriculum and in dental practice after graduation.

FUTURE OBJECTIVES

The statements about the future objectives for the teaching of undergraduate orthodontics were, as might be expected, influenced or modified by the factors of time and the acquisition of adequate teaching personnel. Some respondents stated that an extra year would be necessary to permit the inclusion of more undergraduate orthodontics, although the majority were of the opinion that it would be possible with a revision of the present curriculum. There was common agreement that it is difficult to procure qualified orthodontic teachers with the budget allowed for salaries.

If these difficulties could be overcome, 24 of the 45 schools want to include more clinical contact with patients. For the most part, this program expansion means actual treatment of the "so-called" simple cases. It is interesting to note that 16 schools now require undergraduates to treat selected orthodontic patients and 8 others permit such treatment if certain prerequisites are met. Thus 24 schools require or permit some treatment, and an equal number desire to increase this clinical experience. For the most part, the schools wishing to increase clinical practice are those that require this type of training, but 7 other schools have indicated a desire to add the treatment of patients. Their inclusion makes a total of 31 schools that include some treatment, wish to increase the amount, or desire to institute it as part of the required clinical practice.

Nearly all of the respondents consider that the treatment provided by the undergraduate should be entirely of a preventive or palliative nature, as evidenced by the answers to the question: "Should the undergraduate curriculum in dentistry attempt to train students in orthodontics to the same level as that required in operative and prosthetic dentistry?" Many responded with an emphatic no without comment, but those who explained the negative answer

based it on the amount of time necessary to produce a specialist in orthodontics. This attitude should be questioned since it may indicate that many respondents misinterpreted the question, unless they felt that the objectives in the undergraduate courses for operative and prosthetic dentistry are to produce a finished practitioner capable of immediate specialization in these dental services at the time of graduation. Such proficiency might be expected of the recent graduate in operative dentistry if the objectives for that course as stated in the 1935 *Report of the Curriculum Survey Committee* are achieved. However, the objective of the course in prosthetics could not be so interpreted, since the report specifies that the student will not be expected to become proficient in dealing with all of the intricate problems associated with abnormal cases but that he should receive a thorough training in the fundamental principles of prosthetic service and their application by general practitioners of dentistry. A number of respondents stated that since the public need is much greater for operative and prosthetic dentistry than for orthodontics, the undergraduate should not receive a fundamental training in orthodontics equal to that required in operative and prosthetic dentistry.

Minor and O'Rourke in their *Dental Education in the United States* state "that adequate training in the fundamentals of orthodontics is, in terms of existing public need, quite as important as for any other subject." They also state "that if the dental course is to be the foundation for a continuous educational program, it should be uniformly basic, and not basic for some subjects and vocational for others." Eight of the 45 schools agree with these statements since they answered that the ultimate goal in orthodontics should be to train the undergraduate to the same level as that required in operative and prosthetic dentistry.

The majority of the schools indicated that future plans should include a thorough course in growth, with particular emphasis on the dento-facial area. Many respondents wished to increase the number of lectures and the clinical experience in diagnosis, and most of the schools were in favor of instituting or increasing the amount of so-called preventive orthodontics.

It can be said that more orthodontics is desired in the undergraduate dental course. It is interesting to note, however, that most schools do not include the amount of orthodontic training prescribed by the 1935 *Report of the Curriculum Survey Committee,* nor would the amount of training in this subject as submitted in the future plans of most schools meet the recommendations of that report.

GENERAL COMMENTS FROM THE SCHOOLS

In the introduction reference was made to evidences of renewed interest in undergraduate orthodontic instruction on the part of administrators of dental schools, particularly in the last decade. One item in the questionnaire was: "Any general comments concerning undergraduate instruction in orthodontics will be greatly appreciated by the Committee." Although it solicited a reply, there was no reason for the respondent to feel that he was compelled to answer. However, 36 of the 68 returns, representing 30 of the 45 schools, included gen-

eral comments. These replies were from 24 of the 43 department heads and 12 of the 25 deans. The replies from the deans bespeak definite administrative interest.

Nineteen of the 36 comments favored undergraduate orthodontic instruction which prepares the student to render orthodontic service at least to some of the general public needing it. Seven of the comments opposed this view as impracticable, if not impossible, and favored orthodontic instruction as a graduate study exclusively.

At the University of California men are graduated from the orthodontic major curriculum who are capable of specializing in orthodontics without quite enough technical training in clinical crown and bridge and prosthetic dentistry to qualify them for the practice of general dentistry. Orthodontics is a major subject in the sophomore, junior, and senior years in the California curriculum. By including orthodontics for three years, but with fewer hours devoted to it each year, more preparation could be offered in operative and prosthetic dentistry, and there would still be a sufficient amount in orthodontics to prepare the student for rendition of intelligent preventive and palliative service in orthodontics.

A comparable program is outlined by the department head at the University of Alberta. A similar expression was received from the Harvard School of Dental Medicine. Both of these opinions decry the devotion of so much time to training in mechano-therapy and its varied "systems" as has heretofore been considered necessary.

The comment from Alberta reads:

> I believe that all undergraduate instruction in orthodontics should be limited to thorough studies of growth and development, true abnormalities and the preventive and interceptive phases of orthodontics. Only as much training in laboratory and clinical "appliance technics" as may be necessary to put into practice the preventive and interceptive phases of orthodontics. This program should cover at least *three* academic years. I believe the results of such a program would be most gratifying.

The comment from Harvard reads:

> The preponderant emphasis on mechanics, appliances and particularly on "systems" of therapy seems entirely out of place in undergraduate instruction. This is equally true for diagnostic "systems," mechanistic criteria of "normal," pet theories and dogmas unsupported by biologic evidence. The intelligent student is repelled and bored by these. He can, however, learn to judge whether an individual occlusion handicaps or threatens to handicap its owner, and to decide how and to what extent. He can learn to use the considerable number of sound, simple, preventive, and interceptive procedures (often entirely neglected), and he can learn to use (often with very little technical training) simple and effective appliances. With these he can perform a valuable health service by *relieving handicaps* under which a large number of people now suffer.

The April 1949 issue of *Harper's Magazine* contains an article by Ian Stevenson, M.D., entitled "Why Medicine Is Not a Science." The Committee quotes from it since so much of its content may be applied to dentistry as well as to medicine:

> Medicine will not achieve the stature of a science until the basic laws of health and disease have been disclosed. But the search for these laws has hardly begun. No discipline can claim a greater array of equipment by which its research is carried on, yet none is inferior to medicine in organizing its knowledge into coherent principles.

. . . Teachers of medicine, almost without exception, are innocent of any hint that their subjects might be amenable to broad principles.

Medicine, in short, has succumbed to the twentieth-century habit of concentrating upon techniques rather than upon the quest for understanding; of thinking that when phenomena have been described they have been explained.

Is it not true that the same defects may be pointed out in dental practice and in dental education as those in medicine to which Stevenson so aptly refers? Facts, equipment, and techniques hold the stage. Basic laws of health and disease, the organization of knowledge into coherent principles, active encouragement of inductive thought, and the search for hypotheses are too often rejected as unscientific in dentistry just as this author says they are in medicine.

Twenty-six years ago A. LeRoy Johnson addressed teachers in a series of ten lectures entitled "Basic Principles of Orthodontia." He drew attention to certain general biologic principles, stressed the development of viewpoint in the student as of primary importance, and in many ways anticipated for orthodontics and dentistry the same criticisms now expressed by Stevenson for medicine. Whether or not Johnson's admonitions have been deliberately observed by orthodontic teachers, none of those who were teaching in 1923 or who have entered the field since then have failed to be influenced by them. His views would be a safe manual for undergraduate teachers of orthodontics to follow today.

As an example of Johnson's efforts to develop viewpoint, it is appropriate to review his definition of orthodontics: "that science which treats of the functional nature of the masticatory apparatus and of the laws which govern its growth and development." The scores of orthodontic department staff members in Canada and the United States who have troubled themselves to grasp the biologic import of this definition have interdepartmentalized orthodontic concepts by imparting their viewpoint to undergraduate students. In schools where this view has been adopted (and there are many) there is no question in the minds of undergraduate students about the major objective of dentistry—the establishment and maintenance of the functions of occlusion. Moreover, there is in these schools no thought of orthodontics as a separate entity in the curriculum but rather it is considered as a basic and integral source of fundamental biologic concepts applicable to all divisions of undergraduate dental training.

In view of the far-reaching application of principles which were originally orthodontic and have come to be those of dentistry itself, it is difficult to understand some of the comments made in the questionnaire replies. Some of them evinced an attitude purporting to disregard anything simple or palliative as worthy of being called orthodontic.

There are some orthodontists both off and on teaching staffs who are reluctant to call anything done by a non-specialist an orthodontic procedure. To keep alive and professional in scope, the orthodontic profession would be very much out of step with all other branches of the healing arts if it denied its interest in developing and maintaining a preventive and semi-preventive or palliative approach. When a specialist trims a vertical slice from a second deciduous molar for preventive reasons—to prevent crowding in adjacent regions as advo-

cated by Dr. Lloyd Lourie—he is just as surely rendering orthodontic service as he would be if he inserted a Johnson twin-wire appliance. When a specialist uses cross elastics to correct a localized cross-bite, the same is true. Why is not the general dentist who trims or uses cross elastics also rendering orthodontic service?

Much of the feeling of separatism between orthodontics and other branches of dentistry would be corrected if we could remove this reluctance on the part of some teachers to train the undergraduate student to render orthodontic service just as other teachers train them to render surgical, prosthetic, and periodontic services which will fall within their scope as general practitioners of dentistry.

CONCLUSIONS AND RECOMMENDATIONS

The Committee has arrived at several tentative conclusions and recommendations:

1. The maintenance of the functions of occlusion is the major objective of dentistry, and the study of occlusion should form the basis of all dental teaching. By study of occlusion the Committee means the origin, evolution and complete development of the teeth, jaws, and face, and the environmental factors which govern their development and may lead to deformity and disease. It also includes the detailed analysis of the normal functioning of each individual part and the various manners in which each function may become deranged.

2. It is recognized that the majority of dental school curricula are such that, with few exceptions, to add this teaching would necessitate the addition of approximately another year. However, curriculum changes already adopted in a few schools having this objective indicate the possibility of so modifying and integrating the work of all clinical departments that it could be encompassed within the present 4400 hours. The Committee wishes to emphasize the fact that where this type of teaching prevails the fundamental concepts of all fields of clinical dentistry are of a more scientific nature.

3. Orthodontics should be regarded as an integral part of undergraduate dental training.

4. Orthodontics should occupy a definite position as a clinical department. The suggested objectives for such a department are to train the student: to anticipate and detect malocclusion—to take steps to prevent or intercept malocclusion where possible—to treat simple cases or the simple immediate problems of complex cases—to use this knowledge as an adjunct to procedures in all other phases of dental practice—to know what cases to avoid and refer to more experienced men in the field.

5. Administrators should study the demands of other departments which traditionally have made it difficult for orthodontics to obtain additional clinical time in the curriculum. There are on record dental curricula in which a total of 265 strictly clinical hours in orthodontics are available to each student from the beginning of the second semester of the sophomore year to graduation without encroachment on the student's time by other departments.

6. Administrators should examine critically the attitudes and motives of orthodontists and others who fear that orthodontic knowledge given to the undergraduate student will prove dangerous. Undergraduate orthodontic courses in most schools may be victims of the movement to overspecialize dentistry. Unnatural barriers are prone to be raised between the various segments of practice, although dentistry itself is a specialty. A man with an active mind should be able to grasp far more within the dental field than has formerly been thought possible. In other words, the learning power of the student has been underestimated.

Moreover, the dangers of "little knowledge" must be feared equally in undergraduate training in all departments. Undergraduate dental faculties would be guilty of failure if they presumed to turn out finished dentists in any field. The student at graduation must have a sufficient sense of his limitations in all departments that will be conducive to stimulation of study and progress as his profession advances and the recognition of the value of experience. Clinical training in preventive and interceptive orthodontics should be the ideal objective of all dental curricula if health service objectives of the profession are to be maintained.

7. It is recognized that the attainment of the purposes stated above will necessarily be through a process of evolution and will depend to a large extent on the development of adequately trained teachers.

The Committee does not consider its work as completed, and the report it now presents is intended primarily to serve as a basis for discussion. It plans to prepare a final report to be presented to the Association at a later date. That report, which will consider the discussion of this tentative report, will contain additional information and recommendations.

President Rinehart: The remainder of the session will be a panel discussion on orthodontics. Dr. Lloyd E. Blauch will be the moderator.

Dr. Blauch: There are two obvious phases to the problem of teaching undergraduate orthodontics. The first deals with what should actually be done in the teaching of orthodontics; the second is concerned with the relation of orthodontics to the other phases of the dental curriculum and the dental school.

The five persons on this panel will discuss the recommendations and findings of the report on the bases of their relations to Dentistry for Children, Periodontia, Restorative Dentistry, Diagnosis, and the Administration of a Dental School. These gentlemen were requested to prepare formal statements, but the request came rather late. It is possible that some of them may not have prepared their statements. However, each of them is expected to state his views. Following these short statements the members of the panel will answer questions. We hope you have plenty of questions and that you are willing to air your own views.

The first person to appear on this panel is Dr. John C. Brauer. He will discuss the relations of the teaching of orthodontics to dentistry for children.

THE TEACHING OF ORTHODONTICS RELATION TO DENTISTRY FOR CHILDREN

JOHN C. BRAUER, A.B., M.Sc., D.D.S.

Teaching of Preventive Orthodontics Recommended

THE Committee on Teaching Orthodontics to Undergraduate Students is to be commended for its efforts in making the detailed survey, and in presenting this vital complex problem for discussion before this Association.

The total number of clock hours now prescribed for the undergraduate curriculum, and the necessity for the coverage of the subjects and areas common to the daily practice of dentistry, do not permit a program involving major orthodontic treatment.

It is agreed with the Committee, that the maintenance of the functions of occlusion is the major objective of dentistry, and that the study of occlusion, which embraces the origin and evolution, the development of the teeth, jaws, and face, and the environment, is essential. It is also agreed that the basic objectives set forth by the Committee to train the student should be adopted:

1. To anticipate and detect malocclusion.
2. To take steps to prevent or intercept malocclusion where possible.
3. To treat simple cases or the simple immediate problems of complex cases.
4. To use this knowledge as an adjunct to procedures in all other phases of dental practice.
5. To know what cases to avoid and refer to more experienced men in the field.

There is a need for an understandable definition of what constitutes a simple case (see objective 3 above). Then, too, it is important that one determine how much clinical time, and how many cases of each type are required to prepare the student adequately for the treatment of these simple cases. These queries reflect sharply on the total problem of the entire curriculum—the necessity of weighting the relative importance of all the subjects and the operations presently required. An evaluation in terms of public and professional need must be one of the criteria for determining the emphasis which should be placed in any given area of teaching. The total problem is very complex, and it warrants an immediate as well as continual study on the part of all concerned.

CORRELATION OF ORTHODONTIC AND PEDODONTIC TEACHING

Pedodontics was the orphan of dentistry for some 100 years after the organization of the first school in 1840. It has been only 10 years since the Council on Dental Education officially included pedodontics in the curriculum required of an approved school. It is difficult to state just where the boundaries of orthodontics and pedodontics cease to overlap. The department of pedodontics generally is interested in space maintenance, which may include the simple labial or lingual arch appliances; missing, supernumerary, or abnormally formed teeth; habits which may be a factor in the development of malocclusion; and the restoration as well as the maintenance of occlusion.

The student or dentist, who would place a restoration in a child's tooth, extract or treat a primary tooth, must be cognizant of all the growth and developmental problems, variations in calcification and eruption schedules, as well as the chronologic and acquired physiologic age. The student in the pedodontic clinic, therefore, is in reality receiving training in preventive orthodontics. Just where the dividing line should be in the scope of training in the pedodontic clinic and in the orthodontic clinic can be determined best in the individual school. A well qualified instructor in pedodontics can assume many of the responsibilities incident to the teaching of preventive orthodontics. An orthodontic department which does not afford clinical training in the undergraduate level may, therefore, delegate such responsibility to the pedodontic staff.

It is important that a close and harmonious working relation be present between the orthodontic and pedodontic staffs. The need for routine consultation between the two departments about individual patient problems relative to growth and development, the size of the teeth and amount of supporting bone, habits, and when and if orthodontic treatment is desirable or necessary, is essential.

CONCLUSION

1. The suggested objective for the training of dental students, as cited in item 4, and as submitted by the Committee, should be adopted, subject to a study of how much time is to be allowed for the clinical treatments of simple cases.

2. A close liaison and working relation should exist between the departments of orthodontics and pedodontics, whereby certain clinical aspects of preventive orthodontics may be delegated to the pedodontic department.

Dr. Blauch: Dr. Samuel C. Miller will discuss the relations of the teaching of orthodontics to periodontics.

THE TEACHING OF ORTHODONTICS RELATION TO PERIODONTICS

SAMUEL CHARLES MILLER, D.D.S.

LIKE many outside the practice of orthodontics, I have been interested in the cold war that has been raging among the advocates of various orthodontic techniques. Dental journals and even the lay press have reported such interesting, if not unusual, procedures as septotomy and overnight tooth movement. The discussions of "whether to extract or not" and "whether teeth move bodily or tilt under orthodontic treatment" have kept many society programs well supplied with papers. I would assume that those who are discussing these varying and often widely divergent approaches are orthodontic specialists who have gained some degree of prestige among their colleagues. Possibly someday, through meetings such as this, orthodontics will come to evaluate impartially all approaches and evolve a choice of treatment that will satisfy all teachers, such as had been developed in the field of periodontics.

If we are to believe that the specialty of orthodontics is attempting a scientific solution to its problems, the determination must be based on adequate and correct fundamental training. Bone and soft tissue are not indestructible.

Orthodontic procedures incorrectly performed cannot be reversed easily. The many failures that come to the hands of various specialists, probably with greatest frequency to the periodontists, attest the need for better training in this most difficult subject.

The Committee has recommended that the training be "an integral part of undergraduate training." It would be wonderful if this aim could be accomplished. Yet the report indicates that 14 of the schools which once required the student to treat cases in the undergraduate courses have reversed their position and now on longer permit it. Why?

The main problem appears to be "Shall we meet the need for more abundant orthodontic service by allowing insufficiently trained general practitioners and partial specialists to perform such procedures?" or "Shall an effort be made to provide more practitioners with the safety of complete fundamental knowledge and intellectual equipment?" The first method apparently would supply more service to more people, but it would be of an inadequate, often fruitless and frequently harmful nature, seriously detrimental to the practice and prestige of orthodontics.

The long-range plan, on the other hand, would increase the number of orthodontists more slowly. Their preparation would be more expensive in time, money and effort to the schools and trainees alike. Yet, the outcome would be a basically established, scientifically executed activity, with greater success and broader rendition of a fundamental health service.

The medical profession has learned the need for adequate training for special services: a minimum of five years' additional training is required of all medical specialists. The orthopedist, whose specialty closely resembles orthodontics, needs two years in general internship and three years of special training, one of which is to be in a basic science, before he may be considered qualified.

I am in accord with the inclusion of as much basic training in orthodontics as a dental curriculum will allow without interfering with any of the other fundamental subjects. To make a specialist without first producing a general practitioner would be to create a sub-dentist similar to the type described by Dr. Walter H. Wright several months ago at the Greater New York Meeting. I would rather see the specialist as a super-dentist. The sub-dentist-orthodontist probably could carry out his specialty fairly well but would be lost, or at least not completely competent, in any ramifications which his practice must make with every other phase of dentistry.

Reduction of the cost of orthodontic treatment to reach the patients of low-income levels, as the Committee suggests, is an important goal. Yet, is it not better to treat fewer cases successfully than to fail in many?

I am in accord with the limited orthodontic training and suggested objectives for the undergraduate student as outlined in the fourth recommendation under "Conclusions and Recommendations." I also grant that if the undergraduate course were extended sufficiently, five years or so, to include better training in orthodontics, the result would be beneficial to the public and the profession. Whether this increase in length of the course is practical when many of the graduates will not undertake the complete practice of orthodontics is a problem that deserves careful consideration.

Dr. Blauch: Dr. Francis B. Vedder will discuss the relations of the teaching of orthodontics to restorative dentistry.

THE TEACHING OF ORTHODONTICS RELATION TO RESTORATIVE DENTISTRY

FRANCIS B. VEDDER, A.B., D.D.S.

HAVING been a practitioner and a teacher of restorative dentistry for a good many years, I have naturally formed some definite opinions about the relation of orthodontics to restorative dentistry, from the standpoint of both practice and teaching.

The report of the Committee is illuminating to one whose interest has been almost entirely in the restorative field. I cannot help wondering how many orthodontists who are not actively engaged in teaching would concur in it. Like many others in the restorative field, I have sometimes had the impression that the orthodontists would like to make orthodontics a specialty almost entirely apart from the rest of dentistry. The report expresses an entirely different view.

We have as patients in our clinics at the University of Michigan a large number of University students, drawn not only from the state of Michigan, but from all over the United States. Examination of the mouths of these patients leads me to believe that a large number of general practitioners of dentistry who are apparently capable and proficient in other fields of clinical dentistry lack knowledge of orthodontics and have little appreciation of what might be accomplished in this field. Many of their patients who might be benefited by even simple orthodontic treatment are not advised of it, and consequently never receive it.

The amount of orthodontic treatment that the family dentist should attempt is a subject I certainly would not try to discuss. He should have sufficient fundamental knowledge of the subject to recognize those cases where treatment is indicated, and either institute treatment himself or, if the case is beyond his ability to treat, refer the patient.

It may be argued that many of these untreated cases were the result of economic conditions or the lack or orthodontists in the community in which the patients lived. Conversation with patients revealed that only a few were told about their abnormal occlusion, and many of them came from families that could have afforded orthodontic service had they been advised of its value.

I am sure that any fear of the orthodontists that, with more undergraduate training, the general dentist will take over the treatment of a large number of cases is groundless. The great majority of general practitioners who are reasonably successful in a restorative practice will not take orthodontic cases for treatment if they can possibly refer them to someone in whom they have confidence. There is nothing that disrupts the routine of a busy general practice more than a few orthodontic patients. Rather than reduce the number of patients referred from general practice, more knowledge of orthodontics is likely to enlarge the volume of referred patients.

Is the danger of "little knowledge," mentioned in the report, any greater in orthodontics than in oral surgery? I only raise the question.

I agree with the recommendations of the report that orthodontics be taught as an integral part of the undergraduate training and that it should occupy a definite position as one of the clinical departments. One of the great problems of teaching in the restorative field is the correlation of the basic sciences with the mechanical phases of restorative dentistry. With a more fundamental knowledge of growth, development, and especially occlusion, this correlation should be more effective. It is obvious, of course, that this teaching, if done by the orthodontic department, must be handled in such a way that it is actually basic for all of the clinical divisions. I make this comment because it has been my experience that many orthodontists seem to be unmindful of the destructive effect of cuspal interference.

The dental curriculum is crowded, and I am sure we are all aware of the pressure of all departments for more of the student's time. It is a capable administrator who can prevent encroachment of one department on another. The report contains a significant statement: "It appears that most of the orthodontic courses are devoting a considerable share of their lecture and demonstration time to the teaching of material that is basic not only to orthodontics but to most of the other clinical dental courses." This situation is not peculiar to orthodontics alone. It exists in almost all clinical divisions, not only in lectures and demonstrations, but probably to a greater extent in laboratory exercises. The instance cited in the report about impressions and models is characteristic. In the course in dental materials, the student is taught the nature, composition, and physical properties of the various impression materials, yet each department that uses impression materials feels that it is necessary either to present this fundamental information again, or to review it before the student is allowed to proceed with the practical application. This condition is true to a considerable extent in soldering, casting and other basically technical procedures. Undoubtedly reiteration of technical exercises develops manual skill, but how far can undergraduate training go? How many inlays, amalgam restorations, bridges, and dentures must a student complete to grasp the fundamental principles?

We cannot expect students to be specialists in all fields of dentistry at the time of graduation. With the present curriculum, except for outstanding students, we cannot turn out finished operators in the restorative fields. I think we agree that after graduation, a dentist is far more likely to improve his operative skill and ability, than he is to increase his knowledge and understanding of basic and fundamental knowledge.

As the head of a crown and bridge department, I'll fight to retain the time to complete the present clinical requirements, but I'll gladly trade one of the required bridges for a better and more fundamental knowledge by the student of the prevention and correction of occlusal disharmony.

Dr. Blauch: Dr. Roy G. Ellis will discuss the relations of the teaching of orthodontics to diagnosis.

THE TEACHING OF ORTHODONTICS
RELATION TO DIAGNOSIS

ROY G. ELLIS, D.D.S., M.Sc. (DENT.), F.D.S., R.C.S. (ENG.)

I WAS relieved to find that the topic assigned to me was changed from "The Findings and Recommendations in Relation to Instruction in Diagnosis and Treatment Planning," to "The Teaching of Orthodontics in Relation to Diagnosis." This change leaves me in a position to concentrate on "Diagnosis" in this short presentation. I assume that I am not expected to discuss "Diagnosis" as applied to Orthodontics, but rather to direct my attention to Oral Diagnosis in relation to the teaching of Orthodontics. I have made this assumption because I think it presents one of the most important, but at the same time, least organized aspects of teaching in relation to orthodontics.

I agree with the first recommendation of the report of the Committee which reads, in part, "That the maintenance of the functions of occlusion is the major objective of dentistry and that the study of occlusion should form the basis of all dental teaching." The undergraduate curriculum should provide for the general practitioner adequate education in all phases of dentistry. For the general practitioner, diagnosis of incipient changes in the oral tissues is equal in importance to the diagnosis of established disease. If he is to be an effective member of an important public health profession, the dentist is expected to render a comprehensive diagnostic service, not only in relation to prosthetic dentistry, operative dentistry, etc. but also in orthodontics.

In a paper read before the Ontario Dental Association in May 1945, Dr. Oren A. Oliver said: "It is my opinion that at least fifty per cent of all malocclusions and facial deformities arise from simple, minor or environmental causes." And in the discussion he added, "General practitioners now let unnumbered incipient cases develop unrecognized in their practice." The premature loss of deciduous teeth, over-retained teeth, retained deciduous roots and faulty operative restorations could all be listed as simple minor causes.

From the general practitioners' point of view, there are two requirements for the diagnosis of incipient oral changes. He must be educated to observe and recognize conditions and influences adversely affecting "positive dental health," and he must have the ability and knowledge to permit him to interpret the findings intelligently. Conditions which even remotely relate to malocclusion are often designated as the responsibility of the orthodontist. Herein lies the danger of the creation of a "no man's land" in dentistry, established through the failure of the general practitioner in diagnosis at the most fundamental level—when simple preventive measures might be effective. On the other hand, the orthodontist often does not see the case at this stage, and his opinion is sought when malocclusion is in evidence. The general practitioner does not require advanced specialized orthodontic education to render an effective health service. I am not happy about the terms "interceptive orthodontics" and "preventive orthodontics" because they immediately suggest a field which is reserved for the orthodontist, and thus relieves the general practitioner of his responsibility.

In defense of the general practitioner it can be stated that he has not been educated adequately to meet fully his obligations in orthodontics, particularly as it relates to general diagnosis. Perhaps the narrowing influence of specialization in the teaching of orthodontics has contributed to this situation, as well as the effect of the crowding of techniques into the dental curriculum to the detriment of the biological sciences, upon which the science of orthodontics is dependent.

Diagnosis in relation to orthodontics, then, is not a specialized form of diagnosis but is based on knowledge which is fundamental to all aspects of oral diagnosis. The education of the undergraduate dental student should proceed along systematic, orderly lines with a study (both macroscopic and microscopic) of normal form and structure of all dental tissues. The student should be thoroughly familiar with the evolution, growth and development of the teeth, jaws and face not as preparation for the study of orthodontics but as bases for every phase of dental science. Dean Appleton has stated: "The undergraduate should spend some time in discovering the normal and in familiarizing himself with it." A comprehensive understanding of the normal makes recognition of the abnormal possible.

Another important phase in dental education is a study of normal function of healthy tissues. The factors which maintain normal tissues in a state of physiologic health are important to all fields of clinical dentistry. A practical knowledge of normal structures and an understanding of vital functions, applied to a study of the whole living organism permit recognition of incipient deviations from the normal and provide the general practitioner with sufficient information to enable him to render a comprehensive diagnostic service.

The future advancement of the dental profession toward more effective participation as a health profession depends not on increasing trends toward specialization (and specialized teaching), not on the development of more refined technical and clinical procedures; but rather on the degree to which true preventive procedures become routine practice. Early diagnosis of departures from "positive health" is basic to the institution of preventive measures, and orthodontics, along with all other branches of dentistry, is included.

Dr. Blauch: Dr. Ernest G. Sloman will discuss the relations of the teaching of orthodontics to the administration of a dental school.

THE TEACHING OF ORTHODONTICS
RELATION TO ADMINISTRATION OF A DENTAL SCHOOL

ERNEST G. SLOMAN, D.D.S., D.Sc.

THE report under discussion either creates or postpones some administrative problems, depending upon whether emphasis is placed on the Committee's observation on lack of hours allotted to teaching orthodontics in most of the dental schools or on the statement that the Committee plans to prepare a final report to be presented to the Association at a later date.

If the Committee had included in its recommendation in addition to the well stated objectives that (a) a thorough course of x number of hours in growth and development with emphasis on the structures above the clavicle be included in the regular undergraduate curriculum and that the hours be charged to—let us say—anatomy; and (b) that five or some other per cent of the total hours of the dental course be devoted to orthodontics, then we would have specific proposals to consider.

The dental school administrators differ markedly in their opinions about the objective related to the ability of the student at graduation. With but little exaggeration we can say that some administrators believe that students should be prepared to handle almost all orthodontic problems; others believe that orthodontics should be taught as a mere introductory course. Fortunately, I know of no one who advocates either of these extremes. However, I have listened to people whose opinions seem very close to both of them.

The report seems to place the desired level of student ability at the time of graduation well above the middle between the high and low mentioned. There is the implied recommendation that the level of education of orthodontics should parallel that for operative dentistry or prosthetic dentistry. If this higher level involves raising the level of orthodontic teaching proficiency—and I trust it does —rather than lowering the teaching of others, then the administrators are faced with many problems, two of which are immediate: the fiscal and the clock hours. The Committee says little about the fiscal problems involved.

The Committee makes no specific recommendation about the clock hours necessary to bring the students to the level of proficiency it recommends. However, the Committee does state in its "Conclusions and Recommendations" that " . . . to add this teaching would necessitate the addition of approximately another year. However, curriculum changes already adopted in a few schools having this objective indicate the possibility of so modifying and integrating the work of all clinical departments that it could be encompassed within the present 4400 hours."

There is considerable difference between adding a year to the curriculum, and cutting off an indefinite number of hours from other departments and turning these over to orthodontics. The report states the objectives very well, and the answers to the "why" problems seem to be well established, at least from the viewpoints of the Committee and many of us. However, little aid is afforded to an administrator about the "how" of increased hours.

Presidents of universities look to the administrators of the several schools and colleges for advice about management policies. Deans of dental schools look to the heads of the departments concerning over-all policies for the departments. The deans of dental schools who are not orthodontists look for guidance on reports such as the one under discussion because the dean who is not an orthodontist perhaps knows less about orthodontic problems than about problems of other clinical departments.

I have examined the schedules of hours devoted to orthodontic programs in three schools that have deans who are orthodontists. The average number of

hours devoted to this subject in these schools is 104, or somewhat below the average of all schools. Apparently the Committee does not choose to have us be guided by the programs of these schools. Perhaps we should examine the program at the University of California, whose teaching program is mentioned in this report, and ask ourselves what that program affords in terms of teaching hours for the prospective general practitioner. I have checked that program and I found the number of hours to be 16.

In discussing this report certain realities must be faced:

(1) the dental school administrators, except those who are orthodontists, know less about this subject than any other branch of clinical dentistry;
(2) the practice of orthodontics is more completely excluded from general practitioners than nearly any other category of dental service;
(3) students who intend to go into governmental service or into general practice seldom, if ever, envision including orthodontics as a service they are to render. Unless the over-all objectives of these students are changed, we are continually confronted by a great mass of students who take the courses in orthodontics reluctantly and feel that the courses are being imposed upon them against their wills. This reaction is not nearly so prevalent in other phases of clinical practice. This situation is one of several good reasons why growth and development should be taught under the auspices of the department of anatomy.

It is hoped that early in the discussion one of the members of the Committee will hazard a guess about the number of hours required for strictly orthodontics in order to accomplish the worth-while objectives recommended in the report.

Dr. Blauch: We have listened to some exceptionally fine papers, and some fundamental issues have been raised. I have heard many discussions about the biologic foundations of dentistry, but I have never been satisfied that some of the people who use the expression "biological foundations of dentistry" freely understand its exact meaning. The kind of effort necessary to make a real biologic foundation will not develop unless some very drastic actions are taken.

It seems to me that one of the significant aspects of the report is the manner in which it proposes to lay a biologic foundation with some meaning—not merely one that consists of a certain number of courses. The report also shows how this foundation actually becomes integrated with the practice of dentistry.

It is obvious that more than a mere discussion of orthodontics is necessary to arrive at suitable conclusions. A thorough discussion and review of the entire course of study are necessary because the undergraduate course in dental education is aimed at making a practitioner of dentistry in addition to laying an adequate foundation. It is to be noted that the recommendations of the report are not aimed at making specialists in orthodontics.

Since the membership of this panel represents two diametrically opposed points of view, it might be helpful to have the members of the panel question each other before questions are received from the floor.

Dr. Brauer: I would like to have either Dr. Brodie or Dr. Moore give an understandable definition of a simple orthodontic case.

Dr. Moore: There are many who hold the rather superior view that a simple case does not exist. This view is based on the fact that it is not possible to predict, when the case is first seen, whether it is ever going to be one that can be called simple. In other words, it is really a complex case.

Thirteen years ago, when we organized the undergraduate program in orthodontics at the University of Michigan, we advisedly adopted some phraseology that might interest you—"cases, the immediate nature of which is simple."

I would also like to say that one of our objectives, one which should maintain an important place in any undergraduate curriculum of orthodontics, deals with limitations. The student should be imbued with a sense of his limitations. He should recognize his limitations because their recognition is essential to the development of self-respect.

Dr. Brauer: Dr. Moore, I have three cases in mind. One is the case of a locked central incisor where the remaining occlusion is relatively normal. The second is the case caused by the loss of a second primary molar. The first permanent molar has moved mesially and the remaining occlusion is relatively normal. Should a man in general practice be qualified to place bands and move the first molar into its proper position? The third case involves the loss of the second primary molar when the child is four or five years of age. Should the orthodontic department place a space maintainer? What is considered to be preventive orthodontics? Are these cases considered to be simple?

Dr. Moore: The three cases you mentioned might be included as simple cases. However, some of the badly tipped molars offer technical problems which might not be allocated safely to the undergraduate student. I believe that most orthodontic departments would usually include them in the undergraduate training program.

As far as the interlocking of the maxillary central incisor is concerned, it can be said that we have no hesitancy in training any general practitioner to treat such cases by one of two or three different simple procedures. We use the acrylic plate technique or the Yale technique, which has been given considerable criticism because it is supposed to traumatize the teeth. We have employed the Yale technique since 1934 and have yet to observe a tooth devitalized by its use.

These simple cases also provide material with which to develop observation programs. Students gain knowledge about the development of the face and jaw regions by observing the cases during the period of treatment. Our undergraduate students carry these cases from the end of the sophomore year until graduation. Thus, they have an excellent opportunity to associate completely the technique of treatment with the pattern of growth and the didactic part of the course.

Dr. Blauch: Does anyone else on this panel wish to make a comment?

Dr. Miller: Dr. Stillman, who taught at New York University, demonstrated the methods of equilibration of occlusion. Although he was a genius at his work, he was not able to teach anyone how to equilibrate the occlusion. When I asked him how to equilibrate the occlusion he said: "It is like a cross-

word puzzle. You have to determine the first word before you can proceed with the next." Since that time an orderly procedure in the equilibration of occlusion has been developed. You can now teach a student step one, step two, and step three. This orderly procedure is used to teach equilibration of occlusion to the undergraduate students at our school. Should not more attention be given to this method of teaching in orthodontics?

Dr. Blauch: In one of the papers a statement was made that orthodontics is a new field of study. Although the statement is not altogether correct, its use is in order for the program this afternoon. The phrase "new field of study" reminds me of what happened years ago in the field of general education.

A hundred years ago the curriculum in college was dominated by the studies of Latin and Greek. Then new knowledge was developed, books that could be read were published, and teachers were trained. The studies of Latin and Greek were placed on the defensive, and the argument was presented in their behalf that they were the only subjects that really merited the distinction of high places in the college curricula. History was forced into a similar defensive position when sociology and psychology were developed, because these courses were taking time from the curriculum that was used formerly by history.

We are faced this afternoon with a comparable situation. Teachers of prosthetic dentistry, crown and bridge, and other courses in the dental curriculum say that it is all right to have this newcomer, but it is not going to take any of our time. Actually an either/or situation does not exist. An analysis reveals that the situation is concerned with a reorganization of the curriculum. It is not concerned with a substitution of one course for another. The fundamental contributions which these fields have to offer must be assembled in their proper relations so that more time is not consumed. A *status quo* cannot be maintained. The new knowledge and new concepts must be utilized.

I wish to ask a question of the members of the panel. Dr. Vedder has given a partial answer, but I would like to have the opinions of other members of the panel. Will the recommended pattern of teaching orthodontics provide sufficient support for the other courses in the dental curriculum so as to enable them to be taught in less time?

Dr. Brauer: I believe all departments should re-evaluate their offerings because I am certain there are duplications of effort. I would certainly concede part of my time in pedodontics to orthodontics if we could sit down, as we should in all schools, and develop a framework of what should be covered in each department.

I am concerned primarily with the quality of the professional man produced by dental education. I am certain that before long some weighting of values will have to be done, i.e., weighting in terms of how much quality is produced in the student from 100 hours of teaching. If we spend 100 hours in teaching gold foil, are we going to get 100 hours of result in our dental students? If we spend 100 hours of teaching in orthodontics, is the end-product going to show 100 hours of quality?

Dr. Miller: In answer to the question asked by Dr. Blauch, I would like to say that everything taught by the orthodontic department has some bearing on what is done in the periodontic department. If we take a broad view—and each of us is interested primarily in training better dentists and not just interested in our own specialty—we could probably reorient the courses of study so that some of the overlappings and duplications could be eliminated. Their elimination would benefit the teachers and the students. The teachers could help each other immensely if they devoted more time to coordination and spent less time in trying to get more scheduled hours for teaching.

Dr. Vedder: I think certain aspects are being overlooked in dental education. If the caliber of our students is not improving so that we can squeeze out some of the reiterations in the dental curriculum, I don't think we are selecting the right type of students from the tremendous pool from which selections are made.

There are certain technical procedures, as I stated in my discussion of the report, that are basic to almost all departments—casting, soldering, mixing plaster, etc.—yet each department head feels that unless he teaches the technical procedure, the student isn't going to get it properly. If these basic techniques were consolidated into one basic technique course, as was done by Dr. Ward several years ago and which has since proved to be successful, considerable time could be saved. This consolidation could be done in the basic sciences as well as in the technical courses.

Dr. Ellis: Dr. Blauch, there is little that I can add to what has already been said in answer to your question except perhaps to make two points.

The first point is that I believe the preparation of the teacher is absolutely fundamental for the type of program we have in mind. Heretofore, many teachers were selected on the basis of their clinical or technical ability. I believe we recognize the need for a better background in the biologic and basic sciences. We must include more teachers in our faculties who have dental training and are able to apply the basic and biologic sciences.

The second point deals with the capabilities of the student. There is no question that some repetition is necessary in certain phases of the dental curriculum, but it can be carried too far. We have in our school during the past winter been studying the curriculum in the hope—and I am quite certain our staff members are confident—that we can eliminate from some courses and make additions to others. There is no doubt in my mind that some space can be created for what we have in mind about the background for orthodontics.

Dr. Sloman: It seems to me that Dr. Blauch has asked me to answer the question I asked the people who made the report.

In the last decade—perhaps a little bit longer—orthodontic teaching in dental schools has progressed although its teaching hours have been reduced. If the philosophy of Dr. Angle as related to us through Dr. Brodie prevailed—a philosophy to which none of us subscribe—and the teaching of orthodontics

were extracted from the dental schools, I am afraid we would have to retain in the regular dental curriculum some of the fundamental teachings and biologic principles that originated in orthodontics.

Dr. Blauch: The opportunity is available to anyone who wishes to direct questions to the members of the Committee or to the members of the panel or, if he wishes to do so, he may make a statement of his own.

Dr. Seyler: It seems to me that prosthetics and orthodontics are those phases of dental practice most usually turned over to auxiliary personnel and specialists shortly after, or immediately upon, graduation. Orthodontics usually provides more information in the undergraduate curriculum about growth and development, malocclusion, the effects of malocclusion on the periodontal tissues, nutrition and esthetics than does prosthetics. Such knowledge is useful to the dentist in the treatment of patients with teeth and not so useful in the treatment of edentulous patients. Why not take the time from prosthetics and assign it to orthodontics and pedodontics? Let's teach dentistry for children and youth and thus minimize the need for geriodontics.

Dr. Wright: The statement was made that the dental curriculum is overcrowded. I have heard that statement for many years, and during those years we have seen many changes. Some of the sacred procedures and techniques that I did as a student of science have vanished and I haven't been able to find a trace of them for the last fifteen or twenty years.

The present dental curriculum is not frozen or fixed. The only fixation we have is in the minds of the teachers and the deans. If we wanted to, we could improve our teaching methods and provide time not only for the field of orthodontic treatment but also for the other services in the field of prevention which will face us in the near future. Too often we think about today, and not tomorrow. I try to look two or three or five years ahead to see what is coming. I have followed that practice for twenty years and I am five years ahead in certain areas. The licensing of technicians is one of them.

Dr. Vedder is correct when he states that reiteration of technical exercises is used to cover our failures to inaugurate modern teaching methods. I think that orthodontics and pedodontics must become the center around which dental education of the future revolves. If you don't believe me now, wait for five or ten years and I think you will discover that it is true.

It is not a problem of overcrowding the curriculum at the present time. It is a question of making room for teaching in the health needs of the public. If the dental schools do not take the necessary steps, the public will. The public has a wonderful way of winning its points, and they can be won through legislative measures.

I agree that we have not yet discovered the limit of our students' ability to absorb dental education. We could give the students one-third more or perhaps one-half more education if we permitted them to proceed. Some of the teachers might have to run to catch up. I confess that when our students graduate they know twice as much as I did when I graduated, and sometimes I think maybe they know more than I do now. I am certain they do in certain areas.

Let's get together and see if we can't get orthodontics in the dental curriculum where it should be.

Dr. Noyes: I would like to comment on Dr. Moore's statement about underestimating the students' ability to learn. I think that we actually don't underestimate the students' ability to learn, but, as Dr. Wright has indicated, we put tremendous handicaps in front of us.

I wonder whether one of the reasons why we have so much trouble in finding schisms in another specialty is that we happen to belong to a specialty. Thus, our specialty looks more or less homogeneous to us because we understand the differences. When Dr. Miller spoke of periodontia, I had chills. In my brief experience as an administrator of a dental school, I have found no division in which there seems to be so little agreement. And yet, Dr. Miller undoubtedly sees and reconciles the differences. As I review my twenty-five years of experience in orthodontics, I believe that most of the disagreements have been concerned with the teaching of the subject.

I wish to ask a few questions that are concerned specifically with the report. Dr. Blauch, isn't there some danger in the questionnaire method of study? Obviously the method has advantages, but what is meant by a particular course? The questionnaire method of study has some similarity to the dental catalogue; it serves more to conceal, than it does to reveal.

Dr. Sloman raised a very important question about growth and development. Where should it be taught? I am not certain whether it belongs to the department of anatomy or the department of physiology.

I would like to ask Dr. Moore whether it isn't confusing to talk about student-teacher ratios of one to two, one to three, or, as far as that is concerned, one to thirty-five? Should not the section of the report dealing with student-teacher ratios explain whether they are applicable to single cases or to demonstrations, or whether they are applicable to the total number of teachers in orthodontics or to the total number of students in the dental school?

I think the conclusions in the report, except for one word, are excellent. The conclusion says that "the maintenance of the functions of occlusion is a major objective of dentistry and the study of occlusion should form the basis of all dental teaching." I cannot concur that the study of occlusion should form the basis of *all* dental teaching. There are different phases and aspects of dental teaching. What about dental medicine? What about the relation of diseases in the oral cavity to the general health of the patient? It seems to me that the word "all" should be deleted.

Dr. Blauch: I would like to answer those questions, but I believe it would be better to have the Committee consider them and report about them in its final report.

It is true that there are problems arising from the questionnaire, but we all understand them and do the best we can.

Dr. Mowry: I would like to direct a question to some teacher or dean who is conducting a course in orthodontics leading to certification as a specialist.

Where does the chief deficiency seem to lie in the undergraduate instruction given the students who are accepted for postgraduate study leading to certification in orthodontics?

Dr. Fleming: They have no knowledge of orthodontics of the postgraduate type. Ordinarily the student who is accepted for post graduate training is given instruction in undergraduate work. The authority for my statement is the experience we have had at the University of California where, as you know, we have two groups of students in orthodontics. We have the undergraduate student who takes three years, or a total of 1,200 hours, of orthodontics. The other group consists of dentists who take a postgraduate course for one calendar year—it has been raised recently to 15 months.

These groups use the same clinics and the same laboratories, and they are taught by the same teachers. They received the same instruction because it has to contain the same fundamentals. However, the instruction is given separately to the two groups. Incidentally, the undergraduate student who has had three years of undergraduate training is better prepared, in our judgment, than the man who comes as a postgraduate student and takes one year—statements by Dr. Miller to the contrary that he does not see how you can prepare an undergraduate student to be a specialist.

I am not satisfied with the round-table discussion from the members of the Committee. I think they have talked round robin. We have a course in orthodontics for undergraduate students at the University of California that has been operating for fifteen or sixteen years. You want to know what you can teach the students in those undergraduate years. No one has asked me the number of hours we find necessary. No one has asked me how much it costs. I think you should be interested.

We spend 1,200 hours in the teaching of orthodontics out of the 4,400 hours. In our undergraduate curriculum where we take the student and prepare him as a major in orthodontics he has the complete operative course, the pathology and so on, but he has no clinical denture prosthesis and no clinical crown and bridge. He never puts his hands on a patient in those fields, but we spend 1,200 hours with that student. That is what we consider an adequate number of hours. Where are you going to find the 1,200 hours in your present curriculum?

How much does it cost? We have under this system 12 undergraduates—6 sophomore, 6 senior—and 6 postgraduate students. The salaries for the orthodontists who teach only orthodontia come to over $20,000 a year. That may answer Dr. Sloman's question.

I think the members of the Committee side-stepped many of the remarks and questions that were put to them. I noticed that Dr. Brauer tried to lead Dr. Moore into a trap, and Dr. Moore shadow-boxed and side-stepped out. Dr. Miller was concerned about the need for training orthodontists of the super type. He certainly did not want to have a sub-level of orthodontists, and he compared the situation to periodontists with many years of postgraduate training. Dr. Vedder pointed out the importance of orthodontics in the curriculum, and he

was going to make the sacrifice to allow orthodontics to come in. He was going to give up something like crown and bridge, but it was just going to be one bridge.

All in all, I think the group came to the conclusion that it would be nice to have orthodontics in the undergraduate curriculum, and they would find some time for it and so on. I am quite sure this Committee would have come to the same agreement had they been discussing the policy of Santa Claus.

Dean Brodie: There are several comments I wish to make. First, the same pattern of thought that has governed us for twenty years is still with us. We are still thinking in terms of departmentalization of teaching institutions. I see no reason why certain aspects of education, fields such as growth and development, should be the prerogatives of the department of orthodontics. Actually the Committee did not have in mind in our preliminary discussion any ideas of gaining control of a major portion of the time in the undergraduate curriculum for the purpose of teaching orthodontics, *per se*.

What we did have in mind was to attempt to convince the teachers in other departments that orthodontics has fundamental material that would be highly valuable to the general practitioner in dentistry even if he never did any orthodontia. We also felt that much of the material now taught in other departments could be dispensed with to advantage in order to bring this fundamental material into the curriculum.

It has been pointed out very generously by Dr. Sloman that orthodontics has made some very striking contributions to our knowledge of the dentition. That material should now become the property of the dental curriculum and no longer be thought of as being distinctly orthodontic.

I would like to answer the question raised by Dr. Mowry. I have been a teacher of graduate students for twenty years, and I have had men from almost all the institutions in this country. I will tell you what they lack. They do not know the occlusion of the teeth. If they are asked the occlusion of the mesial lingual cusp of the upper first permanent molar, they can't give it. They do not know the details of the muscles of mastication or even the elements of the peridontal membrane. We have to teach it two or three times before they get it.

I believe Dr. Ellis made the statement that we need to reduce some of this high departmentalization and training in our divisions and begin to study the patient. Medicine makes the same error. Medical schools and dental schools do not teach the normal individual—the base line from which all deviations must take place.

I agree with Dr. Wright that the central core of all our instruction in the future must be the child. It must be the continuing individual from the time he is born until the time he is an old man. You can learn more from the child than you can learn from the adult. This study is not exclusively the field of the orthodontist. It has become so by tradition, but it is about time it became the province of the dentists.

We ask that the contributions to the dental curriculum made by orthodontia be scrutinized by dental educators, and that the material in the field be

adopted or adapted to the needs of all departments. We also ask that the central point of interest be on the patient, the normal patient. It is easy enough to teach the technique of orthodontia. You can teach the most exacting technique in a period of five weeks so that the moderate student can handle the mechanical aspect.

I would also like to discuss the Dr. Brauer-Dr. Moore situation: How can you tell the simple case from the complicated case? Dr. Brauer gave three examples. I stated in my foreword that we smile when we hear about simple cases because we know there are complications, and it is not easy for the uninitiated to discover differences. In the case of the interlocked incisor we take patients into the clinic, hand them a tongue depressor, show them how to apply it to the tooth, and tell them to come back in two weeks. If they work the applicator correctly the tooth releases. It is simple orthodontia. You can apply that treatment successfully in some cases and it works fine. The student graduates, and in three or four years he calls you and says, "It won't work." He brings the patient to you and your examination shows a class 3 mouth occlusion. The whole jaw is off, and the interlocked incisor, which to him is exactly like those in the cases he treated as an undergraduate, don't respond. Where does the fault lie? He looks only at the tooth. It is an interlocked incisor; therefore, the depressor ought to work. This particular case is one where it takes experience to tell the difference between what appears to be an identical condition in two individuals. The reply I would like to make is not that you try to find space in the curriculum for the inclusion of a lot of clinical orthodontics. If you will permit the training of students in basic work, which doesn't mean more anatomy or this, that the other thing but that the dental teacher is beginning to think and teach in terms of morphology, growth and development, then you don't need very much time to train them clinically in the exacting techniques of dentistry.

Dr. Blauch: On behalf of the Committee on Teaching and the Committee on Orthodontics, I want to thank the members of the panel for their excellent contributions, and I want to thank you for the sympathetic attention you have given and the interest which you have shown.

Dr. Moore: For the record, I think we should have a short reply to Dr. Brodie's statement about this "simple treatment." If the student who five years later found he was attempting to treat a class 3 with a tongue blade had been told when he was in school what his limitations were, he would never have attempted to treat the case with a tongue blade. I would like to repeat that our interpretation of the word "simple" is, as I told you before, "conditions, the immediate nature of which is simple." The student is, of course, taught to recognize conditions, the immediate nature of which is simple.

(The meeting recessed at 5:35 P.M.)

Proceedings of the Twenty-seventh Annual Meeting of the American Association of Dental Schools*

at

French Lick, Indiana

March 27, 28, and 29, 1950

MARCH 27, 1950

AT the Twenty-sixth Annual Meeting of the Association, the Subcommittee on Teaching Orthodontics of the Committee on Teaching sponsored a program on "Teaching Orthodontics to Undergraduate Dental Students." The program began with the presentation of a paper, "Teaching Orthodontics—An Historical Introduction," by Dr. Allan G. Brodie. This was followed by the Subcommittee's tentative report, "Teaching Orthodontics to Undergraduate Dental Students," given by Dr. George A. Moore, Chairman of the Subcommittee. The report was based on information collected by a questionnaire survey of the teaching done in this phase of education in the dental schools of the United States and Canada. The recommendations and findings of the report were then discussed on the bases of their relations to Dentistry for Children, by Dr. John C. Brauer; Periodontics, by Dr. Samuel C. Miller; Restorative Dentistry, by Dr. Francis B. Vedder; Diagnosis, by Dr. Roy G. Ellis; and Administration of a Dental School, by Dr. Ernest G. Sloman. (See Volume 26, PROCEEDINGS of the American Association of Dental Schools, 1949, pp. 83-129.)

It was decided that the Subcommittee should present a continuation program at the Twenty-seventh Annual Meeting of the Association. The papers presented at the meeting and the final report of the Subcommittee were forwarded to the Editor of the *Journal of Dental Education* for publication. Consequently, this volume of the PROCEEDINGS contains only the outline of the program.

THE TEACHING OF ORTHODONTICS

Dr. Lloyd E. Blauch, *Chairman,* Committee on Teaching
Dr. George A. Moore, *Chairman,* Subcommittee on Teaching Orthodontics

The program had two objectives: (1) to demonstrate the teaching of material that is fundamental to Orthodontics and to indicate how this material is important to the concepts of general dentistry; and (2) to present a suggested revised program of orthodontic teaching at the undergraduate level.

*This material was reprinted from Volume 27 of the Proceedings of the American Association of Dental Schools.

Objective I

Model Undergraduate Lectures

Dr. Allan G. Brodie, Presiding

"Applications to Dental Anatomy," Dr. Robert B. Hedges, Temple University.

1. Phylogency of the teeth and jaws
2. Comparative dental anatomy

"Mechanisms of Adjustment to Wear and Accident," Dr. Alton W. Moore, Washington University.

1. Types of teeth classified according to adjustment
2. Human tooth design

"Anatomical and Physiological Principles," Dr. T. R. Graber, Northwestern University.

1. The design of bones
2. The musculature of the head and neck
3. General principles of muscle physiology

"Applications of Anatomical and Physiological Principles to Clinical Fields of Dentistry," Dr. John R. Thompson, Northwestern University.

1. Restorative dentistry
2. Oral surgery

"Growth of the Jaws and Eruption of the Teeth," Dr. Allan G. Brodie, University of Illinois.

1. Methodology of investigations
2. Growth of the brain case
3. Growth of the upper face
4. Growth of the mandible
5. Growth and eruption of teeth
6. Dentofacial relations

Objective II

A Suggested Revised Program of Orthodontic Teaching at the Undergraduate Level

The Subcommittee on Teaching Orthodontics did not have a completed report to make on "A Suggested Revised Program of Orthodontic Teaching at the Undergraduate Level." However, Dr. Moore presented a progress report.

PROGRESS REPORT ON TEACHING ORTHODONTICS TO UNDERGRADUATE DENTAL STUDENTS

Carrying forward a plan adopted by this Association in 1944 for the continuous study of dental teaching with special reference to the several subjects of the undergraduate curriculum, the Subcommittee on Teaching Orthodontics submitted a tentative report at the Association's June, 1949 meeting. Copies of the tentative report were mailed in advance to the administrative heads and orthodontic department heads of the member schools of the Association in order to stimulate discussion at the general session at which it was presented.

In brief, the conclusions and recommendations of the tentative report were:

1. The maintenance of the functions of occlusion is the major objective of dentistry, and the study of occlusion should form the basis of all dental teaching.

2. With few exceptions the dental school curricula are such that to add this teaching would necessitate the addition of approximately another year. However, curriculum changes already adopted in several schools indicate the possibility of modifying and integrating the work of all clinical departments so that it could be encompassed within the present 4400 hours.

3. Orthodontics should be regarded as an integral part of undergraduate dental training.

4. Orthodontics should occupy a position as a definite clinical department.

5. Administrators should study the demands of other departments which traditionally have made it difficult for orthodontics to obtain adequate clinical time in the curriculum.

6. Administrators should examine critically the attitudes and motives of orthodontists and others who fear that orthodontic knowledge given to the undergraduate student will prove dangerous. Clinical training in preventive and interceptive orthodontics should be the ideal objective of all dental curricula if health service objectives of the profession are to be maintained.

7. The attainment of these purposes will necessarily be achieved through a process of evolution and will depend to a large extent on the development of adequately trained teachers.

The Subcommittee members agreed that orthodontics should constitute one of the clinical departments of the dental schools. However, the degree of enthusiasm of the committee members was tempered by the futility with which they regarded the problem of including and integrating teaching material fundamental to orthodontics and at the same time important to the concepts of general dentistry. It was agreed (1) that without utilizing and, in fact without pointing up this basic material, clinical orthodontics can not be made an effective and useful department of undergraduate dentistry, (2) that the orthodontic staff can not handle both the basic and the clinical divisions of its requirements without a lengthening of the curriculum, and (3) that the basic material fundamental to the teaching of orthodontics is so important to the concepts of general dentistry that serious thought should be given to the re-orientation and re-integration of biologic fundamentals, with the result that all departments of dentistry would benefit without the addition of time to the curriculum.

The committee, therefore, requested and was assigned general meetings filling one afternoon and one evening of this session. The objectives originally planned for these general meetings were:

1. To demonstrate the teaching of material that is fundamental to orthodontics and to indicate the importance of these concepts to general dentistry.

2. To present a suggested, revised program of orthodontic teaching at the undergraduate level.

The magnitude of these two objectives, if properly executed, did not become apparent until several months had been spent on their preparation. The committee agreed that if model undergraduate lectures such as those you have heard today were to fulfill their purposes of demonstrating orthodontic fundamentals and indicating the relation of the material to the concepts of general dentistry, there would have to be several lectures and adequate time for their presentation. It was also agreed that if objective *one* were to be handled effectively, objective *two* would have to be postponed for lack of time to present it properly. Moreover, it is the consensus of the committee that objective *two* is of sufficiently pressing importance that it will require a general meeting filling one afternoon of the 1951 session at which a suggested, revised program of undergraduate orthodontic teaching would be presented along with suggestions as to hour, staff, and course content requirements. In addition, the program should include at least two men with experience in such teaching to demonstrate laboratory, clinical, and seminar material and the correlations with basic subject matter of the sort presented today.

Accordingly, the committee closes its progress report of 1950 with the formal request to the Association that it authorize its 1951 program committee to allocate a general meeting in 1951 to the Subcommittee on Teaching Orthodontics for the purposes outlined above.

ALLAN G. BRODIE
G. VERNON FISK
SAMUEL HEMLEY
LESTER B. HIGLEY
THOMAS D. SPEIDEL
WENDELL L. WYLIE
GEORGE R. MOORE, *Chairman*

(The report was referred to the Executive Committee for consideration in planning the program for the 1951 meeting of the Association.)

REPORT OF THE COMMITTEE ON EDUCATION, AMERICAN ASSOCIATION OF ORTHODONTISTS, 1951*

BECAUSE the last two annual reports of your Committee on Education have already been published in the AMERICAN JOURNAL OF ORTHODONTICS it does not seem necessary to review the work of the first two years except to recall that, following our meeting in New York in 1949, when your present committee was elected, it subsequently joined the Committee on Instruction in Orthodontics of the American Association of Dental Schools. Both committees had been assigned the same task, and it seemed wise to combine their efforts.

The final report of the work of the two groups was presented at the annual meeting of the American Association of Dental Schools, at French Licks, Ind., on March 19, 1951, and Dr. Hemley, chairman of the Schools Association committee, has made available a copy of the report for presentation to you.

UNDERGRADUATE INSTRUCTION IN ORTHODONTICS

Report to the American Association of Dental Schools by the Committee on Instruction in Orthodontics March 19, 1951

The Committee on Orthodontics was appointed in 1948 by the Committee on Teaching of the American Association of Dental Schools. It made a tentative report to the Association in 1949, which summarized undergraduate orthodontic teaching in the dental schools of the United States and Canada and set forth seven conclusions and recommendations.

(An abstract of the report and the papers and discussions relative to it were published in the proceedings of the American Association of Dental Schools, 1949, pages 88-109.)

The Committee recommended that orthodontics should be regarded as an integral part of undergraduate dental training and that it should occupy a position as a clinical department. The Committee recognized, however, that serious problems had to be overcome in order to make the recommendations effective. One of these problems was how to include in the undergraduate dental curriculum a considerable body of material that is fundamental to orthodontics and is at the same time basic to other aspects of general dentistry.

The point of view of the Committee was:

". . . (1) that without utilizing and, in fact, without pointing up this basic material, clinical orthodontics cannot be made an effective and useful department of undergraduate dentistry, (2) that the orthodontic staff cannot handle both the basic and the clinical divisions of its requirements without a lengthening of the curriculum, and (3) that the basic material fundamental

Presented at the meeting of the American Association of Orthodontists, Louisville, Ky., April 23-26, 1951.

*This appeared in the September, 1951, issue of the JOURNAL and is reprinted here for completion of the material.

to the teaching of orthodontics is so important to the concepts of general dentistry that serious thought should be given to the re-orientation and reintegration of biologic fundamentals, with the result that all departments of dentistry would benefit without the addition of time to the curriculum."

The Committee therefore requested opportunity to demonstrate the teaching of material that is fundamental to orthodontics and to indicate the importance of these concepts to general dentistry as well. Two general sessions of the annual meeting of the Association in 1950 were granted to the Committee for this purpose. At that time, through the generous efforts of Dr. Allan G. Brodie, five model undergraduate lectures were presented to this association to demonstrate this interrelationship under the headings: (1) Applications to Dental Anatomy; (2) Mechanisms of Adjustment to Wear and Accident; (3) Anatomical and Physiological Principles; (4) Applications of Anatomical and Physiological Principles to Clinical Fields of Dentistry; and (5) Growth of the Jaws and Eruption of the Teeth.

Those who witnessed the five lecture demonstrations which he arranged were agreed that the subject matter presented should be considered basic to all departments rather than exclusively important to orthodontics and that correlations between basic sciences and clinical subjects which have had to be worked out in orthodontic teaching can be used, in fact must be used, to strengthen this relationship in all other departments.

After this sort of demonstration at last year's session, it remained for this Committee to present its conclusions and recommendations. It became necessary first, however, to decide whether or not, theoretically at least, it favored the extension of the undergraduate course in dentistry to include the treatment of patients having malocclusion.

For twenty-five years a serious effort has been made, first in a few, and later in most of the schools, particularly after the publication of the curriculum survey report in 1935, to correlate teaching in all departments with the biologic approach. After a slow process of evolution, discouragingly slow at times, most schools now recognize the importance of this correlation and succeed with it to such an extent that the poorest job done now is far better than the best that was being done fifteen or twenty years ago.

During all these years orthodontics has continued to be the field in which the relationship between clinical dentistry and the biologic sciences can be demonstrated most vividly and convincingly to the student. This is true because most of these relationships are seen better there than in the other clinical fields of dentistry. And yet this most natural of all means by which the biologic approach can be effectively indicated has been missed by all but a few schools.

It is therefore the considered opinion of this Committee that the expansion of clinical orthodontics provides an excellent opportunity to tie clinical dentistry more securely into its biologic background.

It is agreed that one of our greatest problems is that of discovering men trained both in basic and clinical fields who possess the ability to make application from the former to the latter. However, it is the opinion of this Committee that, once objectives are determined, teacher preparation will be stimulated to

meet them and the personnel shortage will be solved. Personnel is already available in several of the schools where clinical programs have been in operation.

The Committee recommends:

That orthodontics should occupy a definite position as a clinical department in the dental course. As such its suggested objectives are to train the student as follows:

a. To anticipate and detect malocclusion.
b. To take steps to prevent or intercept malocclusion where possible.
c. To treat simple cases or the simple immediate problems of complex cases.
d. To use this knowledge as an adjunct to procedures in all other phases of dental practice.
e. To know what cases to avoid and refer to more experienced men in the field.

It is estimated that approximately 300 hours would be required to implement this clinical program.

Since the Committee's survey showed a lack of time in many schools for the adequate teaching of undergraduate orthodontics, it is apparent that some means must be found to provide the time necessary to carry out the program recommended. The Committee makes the following recommendations for obtaining this time:

1. As indicated in previous reports by this Committee, it is apparent that the maintenance of the functions of occlusion should form the basis of all dental teaching. By study of occlusion in this connection, we mean the embryological, fetal, and prenatal development of the teeth, jaws, and face; environmental factors which govern them throughout life and which may under certain circumstances lead to deformity and disease. It must include the detailed analysis of the normal functioning of each individual part and the various manners in which each such function may become deranged. The Committee wishes to emphasize the fact that where this type of teaching is embraced, the fundamental concepts of all fields of clinical dentistry are of a more scientific nature.

The Committee, therefore, recommends:

That this material now be considered basic and that all clinical departments share in the responsibility of planning its presentation and in making available the necessary time in the curriculum. The Committee suggests that each school might well appoint a committee with representatives from all departments to determine:

a. Content of such a course or courses
b. Its placement in the curriculum
c. Personnel and facilities for the presentation of this material

2. As a means of obtaining additional time for the teaching of undergraduate orthodontics the Committee also recommends that the total curriculum be re-evaluated to make sure that it is consistent with sound teaching principles

and efficient teaching methods and that it excludes repetitive, out-of-date, and other nonessential material. In those schools where such critical re-evaluation has been made, its effectiveness in the saving of time has been conclusively demonstrated.

The Committee suggests that the time seems ripe for a reappraisal of the dental curriculum with a view to breaking down its present highly departmentalized organization and a substitution, therefore, of a course of instruction aimed at the rendering of a complete service to the patient throughout life. This will require the bringing together of all biological knowledge into a logical sequence and its application to the several types of clinical service.

Respectfully submitted by the
Committee on Instruction in Orthodontics
ALLAN G. BRODIE, University of Illinois,
G. VERNON FISK, University of Toronto,
SAMUEL HEMLEY, New York University, Chairman, 1950-1951,
LESTER B. HIGLEY, State University of Iowa,
GEORGE R. MOORE, University of Michigan, Chairman, 1948-1950,
THOMAS D. SPEIDEL, University of Minnesota,
WENDELL L. WYLIE, University of Washington,
CHARLES WALDO, Harvard University.

This report is tendered to the Board of Directors of the American Association of Orthodontists as the report of its Committee on Education for 1951.

Respectfully submitted,
L. B. HIGLEY,
T. D. SPEIDEL,
A. G. BRODIE, Chairman.

Editorial

Orthodontic Education

ORTHODONTIC education started at about the beginning of the century as more or less of an indoctrination and briefing routine, and has been a much mooted subject ever since. Few subjects in orthodontic literature have occupied more space; notwithstanding the subject is still far from standardized, as are many courses pertaining to the health services.

It was decided by the Board of Directors of the American Association of Orthodontists, at its meeting in Louisville in 1951, that it would be interesting to the members and to the readers of the JOURNAL to assemble the various reports of the Committee on Orthodontic Teaching of the American Association of Dental Schools, and have them printed in one issue. This material was assembled by Dr. Allan Brodie, of Chicago, and in this issue appears the most profuse material ever assembled on this subject in any one issue of the JOURNAL since its birth in 1915.

The assembling of this material reminded me that quite an extensive editorial appeared in the JOURNAL many years ago on this subject, and that it would be interesting to review the early editorial along with the material in this issue.

Thirty-six years ago, or about the time that World War I was occupying the attention of the entire world, the late Martin Dewey, the first editor of the then called *International Journal of Orthodontia,* wrote an editorial on the subject of orthodontia and post-graduate instruction that attracted a great deal of attention.

In order to convey the status of orthodontic training in 1916, the following Dewey quotation is interesting to read in 1952. Here are some excerpts Dewey wrote in 1916 at the time he was operating the Dewey School of Orthodontia:

> There has never been a time in the history of the dental profession when so much attention was being given to post-graduate dental work as at present. The reason for this is that the profession has suddenly awakened to its responsibility and the dentists are trying to qualify themselves to meet that responsibility.
>
> . . . . . .
>
> In orthodontic post-graduate instruction the Angle School of Orthodontia was the first school to be organized, and probably as the result of its organization, the practice of orthodontia was advanced more than by any other effort. Some individuals criticised the Angle School and its methods, but the fact is that the majority of the graduates of that school were extremely successful; in fact, they were so successful that it became a desideratum among the dental profession to be known as an Angle graduate. That such distinction was coveted is proved by the action of a number of men in different parts of the country who posed as "Angle graduates" who had never been instructed in that school. This post-graduate instruction, like

> others that we have mentioned, was not a financial success. After being conducted a number of years, the school was discontinued, which suggested the necessity of some measures being provided by which, in the future, instruction of the character given in the Angle School could be acquired.
>
> One of the objections to post-graduate courses in orthodontia was that they were limited to eight weeks, which some of the profession considered as too short a time. While we will admit that eight weeks is not sufficient in which to learn orthodontia, it must be borne in mind that we must deal with a condition, and not with an ideal. The orthodontic students in the past have been men of the dental profession who were depending upon their calling for a livelihood, and who were limited as to the amount of time they could devote to post-graduate work. In other words, the man who has an established practice, and who depends on that practice for a livelihood, canont devote eight or nine months to a post-graduate course, as the financial sacrifice would be too great. In fact, most of the prospective students object even to an eight weeks' course, but they are not aware of the amount or character of work which must be covered in that time and they also object to the loss incurred by leaving their office for eight weeks. Experience has, however, shown that eight weeks is a logical compromise. A longer time would be much better, but with the majority of students it would be impossible to attend for a longer period.

The Dewey editorial, written during the days when most orthodontic education was secured in private schools, goes on to say:

> It is true, the American Society of Orthodontists at its meeting in Toronto had an education committee appointed by the president, Dr. Kemple, and the object of that committee is to inquire into the value of the contemplated post-graduate instruction, and to endeavor to standardize orthodontic instruction in dental schools. This committee has no legislative authority, and will be limited to making recommendations, which we hope it will do. If, however, recommendations are made that may be construed as a criticism of certain post-graduate schools, the members of the committee would lay themselves liable to possible damage suits, as the American Society of Orthodontists is not incorporated. It is to be hoped, however, that this committee will do something toward bringing order out of chaos, and that its effort will have a tendency to standardize post-graduate instruction.

The AMERICAN JOURNAL OF ORTHODONTICS devotes the current issue to the discussion of orthodontic education as reported in the Transactions of the American Association of Dental Schools. Dewey made the point that orthodontic education must be standardized on both the undergraduate and post-graduate levels, and standardization still seems to be just as far from perfected as it was at the time Dewey wrote the editorial.

It is to be hoped that the publication of this résumé of orthodontic education will help to put in sharp focus the necessity for the standardization of orthodontic education throughout the world. This will be a forward step in bringing the specialty to an understanding and coordination of its various

schools of thought. Nothing is more important in the present stage of orthodontic development, and its future, than to establish fundamentally basic teaching in orthodontic schools, directed by teachers of *wide clinical experience.*

A committee composed of ex-members of the American Board of Orthodontics should know a great deal about what comprises good basic orthodontic education because of their background and experience in examining the product of the various graduate schools in orthodontics, and also because of their wide experience in the orthodontic field.

The fact that standardized teaching of orthodontics, whether it be at the undergraduate level or in graduate courses, has not yet been attained should not be viewed with too much pessimism. Some courses represent the viewpoints of individual teachers, some of whom are men of deep convictions. Time alone will determine whether they be wholly correct, partially so, or if their ideas are founded upon the kind of thinking that prompted the fond mother, viewing the marching troops, to say, "They are all out of step but my son Melvin." A reasonable period of years will be required as a practical testing ground. Some students will remain indoctrinated by their former teachers; others will, through the channel of clinical experience, learn to think and act differently. In time their convictions will be made manifest in the sphere of teaching, and the mechanical indoctrination procedures peculiar to orthodontic training will be eliminated. This field then could, and would, be standardized just as quickly as any other department of health service, such as ophthalmology, rhinology, or surgery.

Orthodontics is plainly on the way to adopting a yardstick of standardization of some kind in its education setup. During that period, no doubt, deans will secure the counsel of the American Board of Orthodontics and other agencies that represent the cumulative knowledge of the step-by-step advance of the specialty of orthodontics throughout a growth period of a little over half a century.

> Though the mills of God grind slowly,
> yet they grind exceeding small.
> —FRIEDRICH VON LOGAU: *Retribution* (translated by LONGFELLOW).

When the educational standard is finally adopted it should be a good one, indeed.

H. C. P.

Department of Orthodontic Abstracts and Reviews

Edited by

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Physiological Tooth Migration and Its Significance for the Development of Occlusion. III. The Biogenesis of the Successional Dentition: By Louis J. Baume, *J. D. Res.* **29**: 338-348, June, 1950.

"The present study deals with the changes which affect the dental arches during and after eruption of the permanent incisors and follows in general the approach of Korkhaus and Neumann's serial investigations. Lewis, Cohen, Goldstein and Stanton, and Sillmann have noted the changes in width and length of the arches at regular intervals. In this study they are designated according to the stage of development of the dentition, namely: Stage 1—The deciduous dentition is completed. Stage 2—The permanent first incisors have erupted. Stage 3—All the permanent incisors have erupted. Measurements in width of the arches are taken between the deciduous canines and between the second deciduous molars at the gingival margin. An attempt is made to establish some practical conclusions in regard to the differences in development which exist in the arches of Type I and Type II.

"A variation of opinion exists in respect to the time and degree of the forward extension of the dental arches. . . . Previous findings, however, showed that the postlactea move mesially, especially in Type I arches, when the lower first permanent molars erupt. These landmarks therefore become unreliable. The mesiodistal relationship of the upper to the lower deciduous canines, however, was found to remain constant even after mesial migration of the lower deciduous molars. Forward movement of the prosthion and infradentale is measured from the center of a line connecting the distal contact points of the deciduous canines to these anterior points (Fig. 1). This distance represents the length of the frontal portion of the arch; the difference in length in serial models, taken before and after eruption of the permanent incisors, indicates the extent of forward growth of the alveolar process.

"The increase in labiolingual thickness of the upper permanent incisors over their deciduous predecessors has been believed to be greater than the increase in thickness of the lower permanent incisors over their deciduous homologues. This has been credited to an apparent increase in forward extension of the upper arch. Since no values for the labiolingual thickness of the deciduous incisors are available in the literature, this dimension is measured in both deciduous and permanent incisors."

"RESULTS"

"The study material consists of serial plaster reproductions of the dentitions of 60 children taken at different developmental stages.

". . . The mean increase in *width of the mandibular arches* after the eruption of the permanent incisors. Between Stages 1 and 2 an increment in intercanine width of 0.5 mm. is noted in Type I and 1.2 mm. in Type II arches. After eruption of all the lower incisors a mean increase in intercanine width of 2.2 mm. occurs in cases of Type I and 2.5 mm. in Type II arches. The maximum increase of 5.0 mm. is found in Stage 3 of Type II. The width of the arches

between the deciduous second molars is also increased in both types; Type II, however, yields lower values than Type I in Stage 3."

. . . . . .

"In regard to the rate of lateral growth, the strongest growth impulse in the mandible is noted during the eruption of the permanent second incisors. It

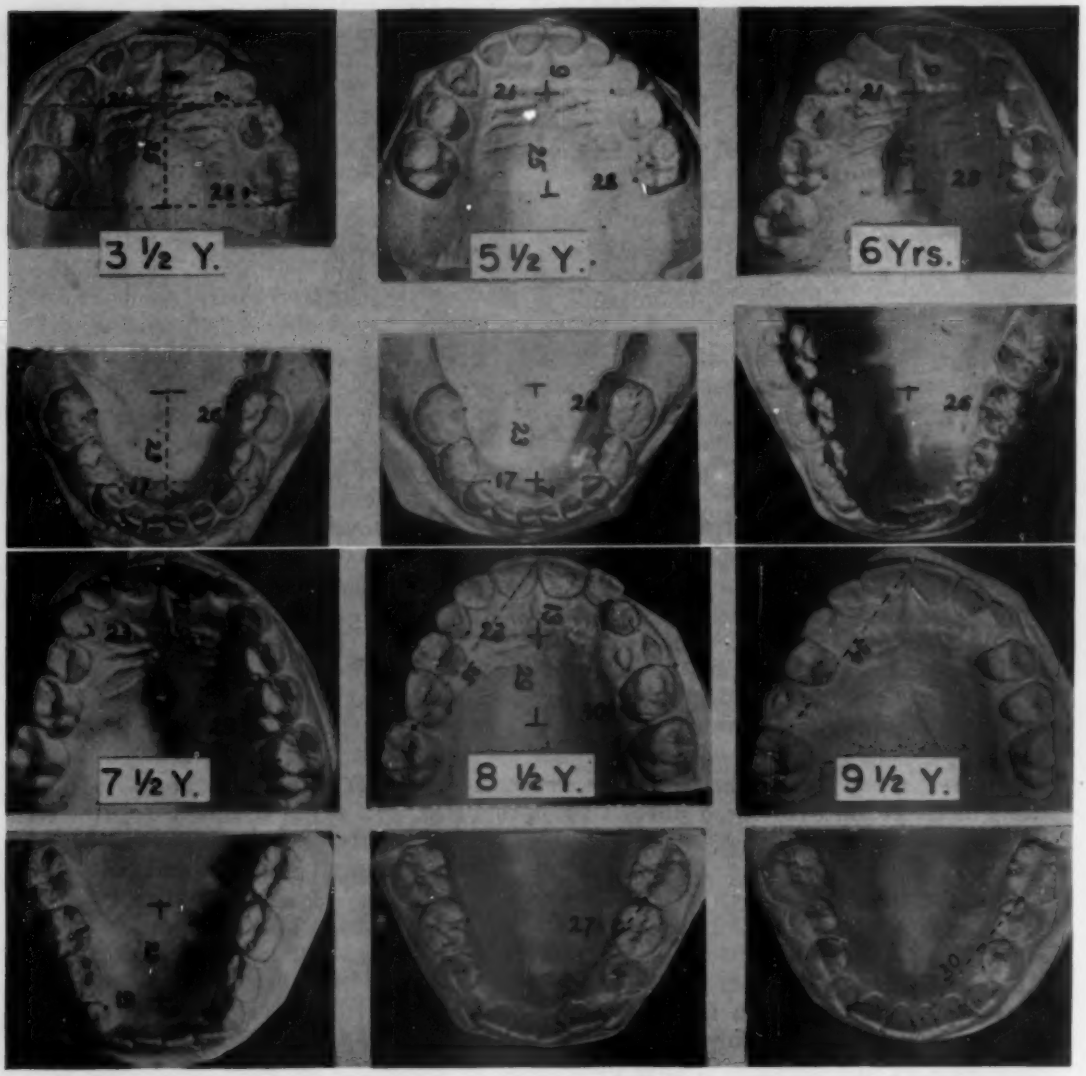


Fig. 1.—Development in Case 32, representative for deciduous dentitions of Type I.

Between 3½ and 5½ years no changes in dimensions of the deciduous arches occurred; the postmolar areas appeared.

Between 5½ and 7½ years note 2.0 mm. intercanine widening of both arches, 4.0 forward extension of the upper arch, and 2.0 mm. of the lower arch.

Between 8½ and 9½ years the tendency for crowding of the mandibular incisors upon eruption of the permanent canines was arrested by extraction of the lower deciduous second molars.

was observed that first incisors which erupted in a slightly rotated position became straightened when the second incisors began to erupt. This is illustrated in Fig. 1 of the plaster reproductions of Case 32 taken of the child at 6 and 7½ years of age. This case is representative for the development of the 44 deciduous

dentitions of Type I. They were all succeeded by mixed dentures with properly aligned incisors.

"The lower arch of Case 42 (Fig. 2) demonstrates a favorable development of a Type II arch with crowded deciduous anteriors. A compensatory widening of 4.0 mm. after eruption of the permanent first incisors made up for the early lack of sufficient lateral growth. Only 9 out of 16 cases of Type II, however, produced such properly aligned anteriors. The rest of the cases (43 per cent) developed crowding.

"The comparatively greater effort to produce harmoniously arranged permanent anteriors in previously closed than in spaced arches is shown in Fig. 3, *a* and *b* of Type I cases, and *c* and *d* of Type II cases. The mean increment of 2.5 mm. in width was increased when the permanent incisors entered directly into the spaces of their predecessors. They immediately established contact with adjacent teeth. These erupting teeth exerted a lateral force displacing neighboring teeth thus widening the intercanine distance as much as 5.0 mm. If, however, the permanent second incisors erupted lingually or in torsiversion to the first incisors, a lateral displacement could not be effected.

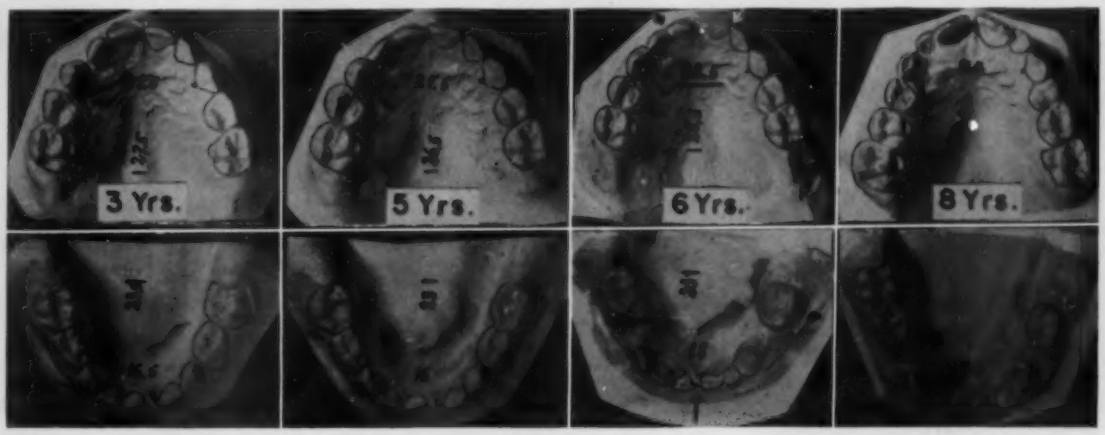


Fig. 2.—Series of development in Case 42 which has a mandibular arch of Type II and a maxillary arch of Type I.

Between 3 and 5 years note decrement in length of deciduous arches and the severely crowded lower incisors.

Between 6 and 8 years note the secondary spacing of the upper deciduous anteriors upon eruption of the permanent lower first incisors.

Between 5 and 6 years note proper alignment of permanent lower incisors by physiological intercanine widening of 4.0 mm. (After extraction of first deciduous molars, space maintainers have been worn.)

"This mechanism disclosed the importance of the initial arrangement of the permanent tooth germs in the jaw, which may be governed by endogenous factors, independent of exogenous influences. Furthermore, as stated by Moore, the etiology of crowding is at least partly based upon hereditary factors.

". . . It is found that the upper arch, which still consists of all its deciduous teeth, responds to the enlargement of the lower arch. The eruption of the lower permanent first incisors produces a simultaneous widening of the maxillary intercanine distance of about half of the mandibular expansion. If this value exceeds more than 1 mm., a separating of the upper deciduous anteriors becomes apparent, that is, a so-called secondary spacing. . . .

. . . . . .

"With the aid of the stereograph of Schwarz tracings of the arches of the same individual at two consecutive stages were made and superimposed on the canine axis. Fig. 4 shows the graphs of Case 8, the child at 5 and 8 years of age.

It exhibits a backward movement of the infradentale (ID) by -0.5 mm. and no positional change of the prosthion (PR). The important role of forward growth of the anterior portion to secure proper alignment of the anteriors is illustrated in Fig. 1 for the upper arches and in Fig. 3, *d* for the lower arches.

"Measurements . . . of the *labiolingual thickness* of the deciduous first incisors and their permanent successors indicate a mean increment of 1.7 mm. between the mandibular homologues and 1.9 mm. between the maxillary ones. Thus the increase in thickness of the permanent first incisors is about equal in both jaws.

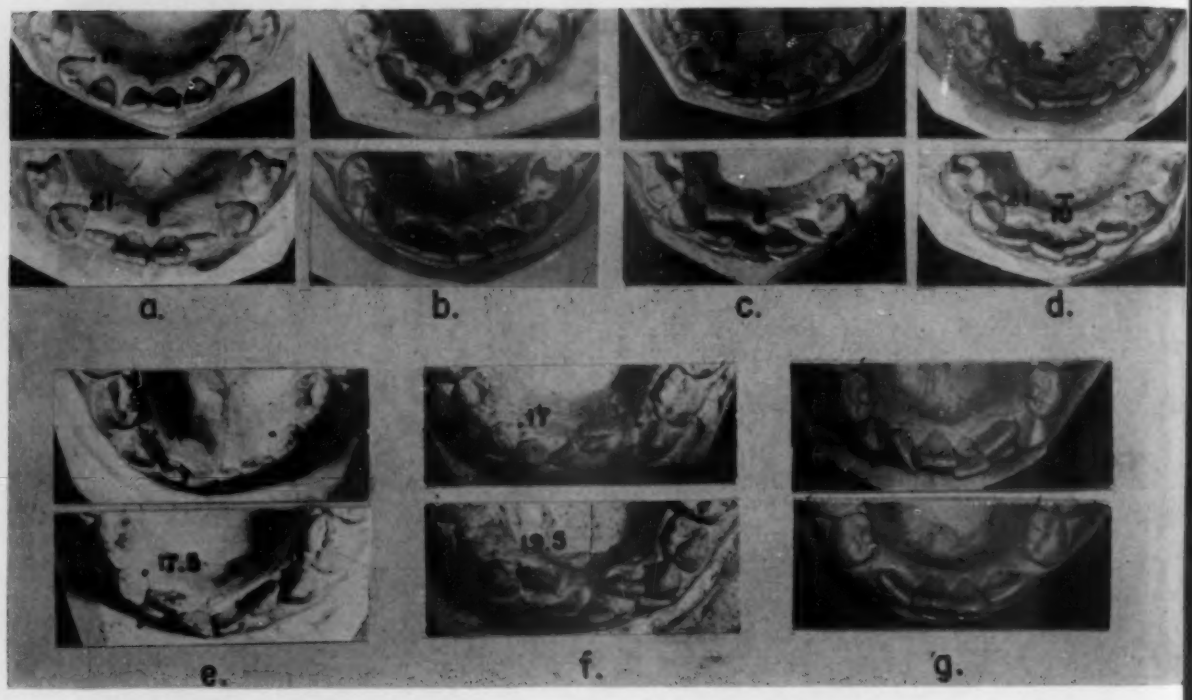


Fig. 3.—Lateral and forward growth during exchange of lower incisors in 7 cases.

a, Case 35, Type I } Note + 2.0 mm. lateral growth and + 1.0 mm. forward growth.
b, Case 7, Type I }

c, Case 2, Type II. Note + 2.0 mm. lateral growth and + 1.5 mm. forward growth. The permanent anteriors are slightly crowded.

d, Case 31, Type II. Note maximum expansion of 5.0 mm. laterally and 3.0 mm. anteriorly; nevertheless slight crowding of permanent anteriors occurred.

e, Case 29, Type II } Lingual eruption of the permanent second incisors prevented a
f, Case 49, Type II } lateral displacement of the canines and produced severe crowding.

g, Self-correction of crowding 2 months after extraction of deciduous canines.

"The transition from the deciduous to the successional dentition was accompanied by little change in the dimensions of the arches.* Various factors account for proper arrangement of the permanent incisors:

"1. *Alignment of the Mandibular Permanent Incisors.*—Concurring with the findings of Lewis and Korkhaus and Neumann, this study revealed that at the time of the eruption of the permanent incisors there occurred a transverse widening of the mandibular arches. This represents one of the physiologic processes to provide space for the erupting permanent incisors and their greater mesiodistal widths.

"The mean increment of 2.3 mm. (the maximum deviation being 5.0 mm.) may be of practical value in suggesting the biologic limits of therapeutic widening

"*The maximum amount was found to be 6.5 mm. while the simultaneous growth of the other parts of the head did go on at a higher rate."

of the mandibular arch. The widening of the arches seems to be due to lateral growth of the alveolar process and not alone to a displacement of neighboring teeth. This is based on the fact that the anterior section did increase in width in cases of Type I even when sufficient space existed to accommodate the permanent incisors. The result was temporary or permanent spacing of the permanent incisors. Some lateral growth occurred in the posterior region simultaneously with lateral growth in the canine region. This is evidenced by the increase in the distance between the second deciduous molars.

"In the postnatal development, intensified lateral growth of the alveolar processes were found to occur during the following periods: (1) the formation of the deciduous arches following the period of lactation; (2) the eruption of the permanent incisors, and (3) the eruption of the permanent canines and premolars, which is shown later.

"A review of the data reveals that the crowding of anteriors is due to a lack of growth of the alveolar processes. The deficiency in alveolar growth, contrary to earlier contentions, can occur in the first period of growth during the formation of the deciduous arches. Then it is manifested in an absence of spaces and frequently in slightly crowded deciduous anteriors. There exists, however, a compensatory mechanism which, during the time of eruption of the permanent incisors, sometimes makes up for this early lack of sufficient growth.

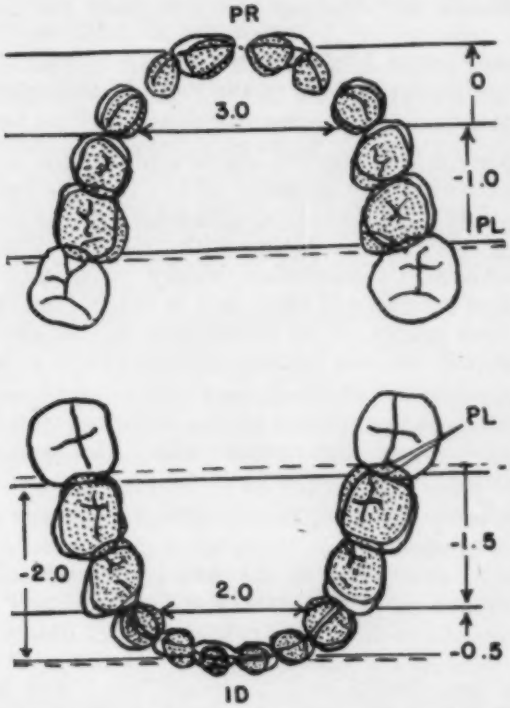


Fig. 4.—Diagraphic tracings of Case 8, child at 5 years (stippled area) and 8 years superimposed on a line connecting the two distal contact points of the deciduous canines. Note shortening of the frontal portion of the lower dental arch by −0.5 mm.* and mesial migration of lower postlacteon (*PL*) by −1.5 mm.*

*The numbers represent the differences in dimensions in mm.

"In regard to the significance of spaces in the deciduous dental arches, the following observations were made:

"(A) In Type II, the mean increase in intercanine width was greater than in Type I, thus compensating for the absence of spaces. This was substantiated by the fact that a greater number of maximum values were recorded in Type II than in Type I.

"(B) All the spaced deciduous arches produced properly aligned permanent anteriors.

"(C) Crowding of the anteriors was found in almost half of the cases in spite of the relatively greater mean increment in width. Previously spaced deciduous dental arches produced favorable alignment of their permanent anteriors whereas those arches without spaces tended to produce crowded anteriors.

"2. *Alignment of the Maxillary Permanent Incisors.*—In the maxilla a similar biologic mechanism prevailed as in the mandible. Observations of serial models, however, revealed two distinct modifications.

"The first of these modifications is caused through the eruption sequence. The permanent first incisors erupt in the maxilla 6 to 9 months later than in the mandible. Due to expansion of the lower arch, in some cases a secondary spacing of the upper deciduous anteriors occurred. Contrary to accepted views, this spreading did not appear in the completed deciduous dentition but at the beginning of the successional dentition when the still undeveloped maxilla was adapted to the widened mandible upon eruption of the permanent lower first incisors. Lewis's illustration of a physiological spacing seems to be based upon this circumstance.

"A second modification is due to morphology and concerns the maxillary primate spaces described above. These frequent diastemata between the upper deciduous second incisors and canines provide space for the wider permanent first incisors.

"The initial arrangement of the tooth germs in the maxilla as well as in the mandible also plays an important role in the final arrangement of the teeth. The germs of the permanent incisors are mainly found in two positional forms:

"(A) The permanent first incisors are in labioversion to the second incisors. The proper alignment occurs as the result of the biologic lateral growth; if this is absent, linguoversion of the laterals persists which in the maxillary arch seldom corrects itself because of the articulation with the mandibular teeth.

"(B) The germs are in torsiversion, singly, or in pairs. These teeth will not straighten out after eruption if there is a lack of alveolar growth. This was experienced with a case where, after extraction of the deciduous canines, the rotated permanent second incisors became harmoniously aligned.

"The clinical application of these findings emphasizes the importance of early therapy. Irregular arrangement of the incisors often can be averted with minimum active expansion of the arches before the roots of the permanent incisors are fully formed.

"3. *Forward Growth of the Alveolar Processes.*—In view of the limited lateral growth, it was apparent that there must exist another biologic process to allow for a harmonious alignment of the wider permanent incisors. This consisted in a forward extension of the dental arches in direct connection with the eruption of the permanent teeth. This extension was found to be greater in the maxilla by 1.0 mm. than in the mandible, but was not analogous to the greater increase in width of the maxilla over the mandible. The increase in thickness of the permanent first incisors over their deciduous homologues was similar. Thus it is obvious that the smaller forward extension of the lower arches cannot be due to tooth morphology. This difference therefore may be interpreted as a lesser growth of the mandibular alveolar process in the sagittal direction. Paleontologists have pointed out that there is an evolutionary tendency for the human mandible to undergo a reduction. Present data may furnish some facts for this contention.

"The measurements of forward growth explain the so-called shortening of the lower deciduous (lacteal) arch after replacement of the anteriors. Taking into account the mesial migration of the lower first permanent molars, a maximum

shortening of 0.5 mm. was noted in only 2 cases out of 60. The lower permanent incisors erupted in a limited linguoversion and remained unchanged due to a lack of forward development of the arch.

"According to Weinmann and Sicher, forward as well as lateral growth appear histologically as circumferential and periosteal bone apposition on the labial and buccal alveolar surfaces. A histological study of the course of this process would be advisable, since the present study gives evidence of only a limited forward extent of the dental arches; this occurred at the time of the eruption of the successional teeth."

"SUMMARY"

"A comparative and biometrical study of serial casts of 60 cases before, during, and after eruption of the permanent incisors demonstrated the following findings:

"1. Expansion of the dental arches in the anterior region, to accommodate the larger successional incisors into proper alignment was brought about by a lateral and frontal alveolar growth during the time of the eruption of these teeth.

"2. The mean increase in intercanine width was greater in the upper arches than in the lower ones and again greater in previously closed upper or lower deciduous arches than in previously spaced ones.

"3. In the mandibular arches the strongest impulse of lateral growth was noted during the eruption of the second incisors, in the maxillary arches during the eruption of the first incisors.

"4. An occasional 'secondary' spacing of the upper deciduous anteriors occurred when the still undeveloped maxillary arch was somewhat widened upon eruption of the permanent lower first incisors.

"5. Spaced deciduous arches generally produced favorable alignment of the permanent incisors while about 40 per cent of the arches without spaces produced crowded anteriors.

"6. The average amount of forward extension of the arches showed no difference between previously spaced and closed arches, but was 1.0 mm. greater in the upper arches than in the lower ones.

"7. According to the tooth measurements the difference between the maxillary and mandibular forward extension could not be credited to a greater increase in thickness of the crowns of the upper permanent incisors over that of the lower ones. It was interpreted as an expression of an evolutionary tendency toward a lessened forward growth of the mandibular alveolar process."

Physiological Tooth Migration and Its Significance for the Development of Occlusion. IV. The Biogenesis of Overbite: By Louis J. Baume, *J. D. Res.* **29**: 440-447, August, 1950.

"The following study deals with the relationship between the degree of overbite of the deciduous dentition and that of the mixed and permanent dentitions and the factors responsible for a transitory change, if any, from the deciduous overbite to the permanent overbite in the same individual."

"MATERIAL AND METHODS"

"The material on which this study is based consists of 52 series of plaster reproductions as described in the previous papers. Casts of each case were made before and after eruption of the permanent incisors and were classified according to the degree of overbite as checked from the lingual aspect of the plaster reproductions in occlusion. The overbite was designated as 'slight,' if the in-

cisal edges of the mandibular first incisors met the upper incisal third of the crowns of the opposing maxillary incisors. If the lower first incisors occluded with the middle third of the upper incisor crowns the overbite was called 'medium.' It was recorded as 'severe' when the mandibular incisors met the protuberance of the cingulum or were found to strike the gingiva.

"Measurements were made of the length of the frontal portion of the upper and lower arches in the deciduous and the mixed dentures, and the amount of forward extension of the maxillary and mandibular arches was calculated from these data."

. . . . . .

"Since there was lessened forward extension of the mandibular arches during the same developmental period, the possibility of a correlation between forward growth and overbite was checked. The measurements of the forward extension of the upper and the lower arches were compared in each case with the development of its overbite. Thus a biogenetic mechanism which determined the degree of overbite became apparent. The findings may be stated as follows:

"1. If the mandibular forward growth was approximately the same (±0.5 mm.) as the maxillary forward growth, the same incisal overbite was produced in the mixed dentition. Fig. 1 represents an example of such a development where the slight overbite in the deciduous dentition was followed by a slight overbite in the mixed one. The mandibular forward extension in both arches was 1.7 mm.

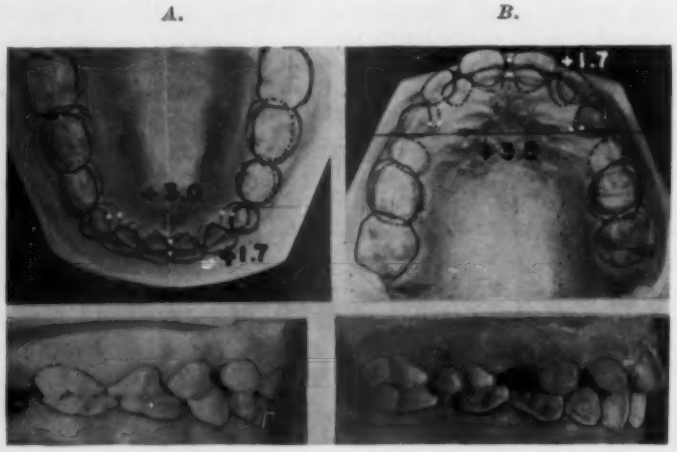
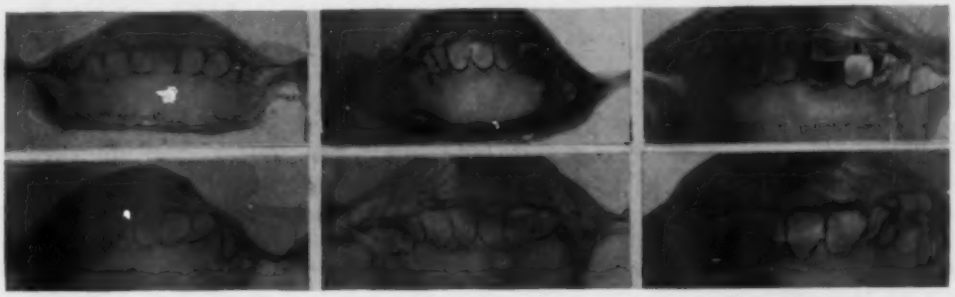


Fig. 1.—The deciduous and mixed arches of Case 27 are superimposed on a line connecting the distals of the deciduous canines.
A, The mandibular forward extension is 1.7 mm.
B, The same forward extension of 1.7 mm. occurred in the maxillary arch.
C, Note slight overbite of the deciduous dentition.
D, Slight overbite is also seen in the mixed dentition.

"2. If there was no forward extension of the mandibular arch or less than that of the maxillary arch, a deeper incisal overbite was observed. Fig. 2, *A* to *C* show such instances where the slight overbite in the deciduous dentition due to the lack of mandibular forward growth had developed into a severe overbite in the mixed dentition.

"3. If the forward extension was greater in the mandibular than in the maxillary arch, less overbite was produced in the mixed dentition than in the deciduous one. An analysis of the models of Case 25 in Fig. 3, *A* to *E* demonstrates the key role of mandibular forward growth in the development of the

overbite. The medium overbite of the deciduous denture was followed by a severe overbite in the mixed denture. The mandibular forward extension was only 0.5 mm. whereas the maxillary one was 3.0 mm. During the eruption of the lower second premolars and upper permanent canines a marked decrease of the incisal overlapping occurred. The cause of this change is indicated by



A. *B.* *C.*

Fig. 2.—Slight overbite in the deciduous dentition is followed by a severe overbite in the mixed dentition concomitant with insufficient forward extension of the mandibular arch as seen from the lingual aspect of the plaster reproduction of 3 cases:

		A, Case 4	*B*, Case 9	*C*, Case 38
Forward extension	Upper arch	3.0 mm.	3.5 mm.	4.0 mm.
	Lower arch	0 mm.	1.0 mm.	1.0 mm.

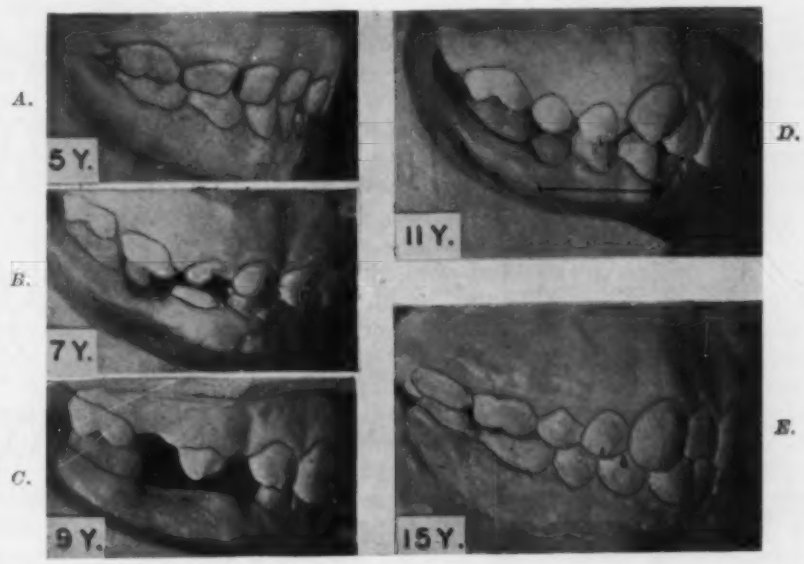


Fig. 3.—Development of overbite in Case 25.

A, Note medium overbite in the deciduous dentition.

B and *C*, Note severe overbite in the mixed dentition. Due to premature loss of deciduous molars, the anterior portion of the lower arch moved only 0.5 mm. forward, while the upper arch developed 3.0 mm. forward.

D and *E*, Note marked decrease in overbite upon eruption of the lower second premolars and compare development of intercuspidation of the opposing first premolars.

measurements which show a forward development of the mandibular arch by 2.5 mm. and none of the upper arch. This is also apparent with the interdigitation of the first premolars in Fig. 3, *D* and *E*. The upper arch developed more transversally through a widening of the intermolar distance by 3.0 mm.

"The study of this series reveals a definite effect of the eruption sequence of the canines and premolars on the degree of the permanent overbite. It was

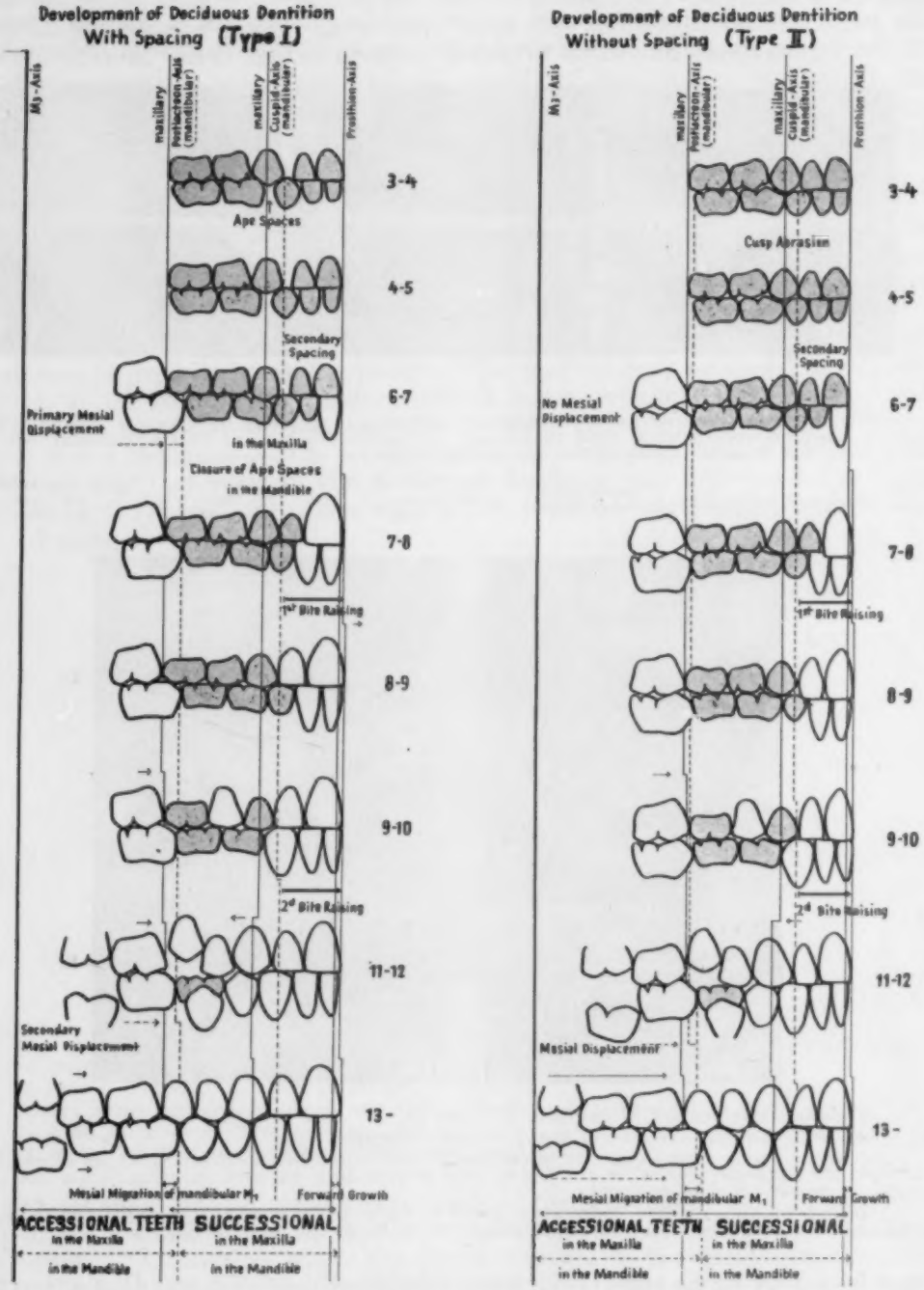


Fig. 4.—Illustration of the physiological tooth migration in the sagittal plane, the result of a biometrical survey on 60 series of development.

observed that in the mandible the permanent canines erupted almost consistently before the second deciduous molars were shed. The lower permanent canine which is about 1.5 mm. wider than its predecessor, therefore, had to secure additional space through a forward extension of the anterior portion of the arch. The extra space, caused by the greater width of the deciduous molars in comparison with that of their successors later was filled through the secondary mesial migration of the permanent molars, which already has been described as the 'late molar adjustment.'"

"In the maxillary arch the first premolar ordinarily erupts before the canine and second premolar. The result of this eruption sequence is that room for the wider permanent canine can be provided from the space reserve of the shed deciduous molars; the already erupted first premolar then is pushed distally. Hence, in the maxilla there was less forward growth than in the mandible; this mechanism aided in decreasing the overbite. Fig. 4 illustrates schematically the order of the physiological tooth migration and its effect on the occlusion. According to both types of deciduous arch forms two different modes of further development are shown. Common for both, however, is the relative constancy of the deciduous canine axis."

"DISCUSSION"

"The degree of overbite in the deciduous dentition appears to be one of the determining factors in the formation of the permanent overbite. Severe overbite in the deciduous denture had a definitely unfavorable prognosis while slight overbite generally was followed by a somewhat increased one in the mixed dentition. The degree of overbite, however, seems to depend primarily upon the amount of mandibular forward growth. This takes place at three different periods: (a) During the eruption of the deciduous canines when it apparently determines the overbite of the deciduous denture; (b) during the eruption of the permanent incisors at which time it may regulate the overbite of the mixed denture; and (c) during the eruption of the permanent canines and premolars when it may define the degree of the permanent overbite.

"The downward growth of the upper incisors is guided by the incisal edges of the lower opponents due to the time interval between the eruption of the upper and the lower teeth. The more the lower incisors remain lingual to the uppers, the further the uppers move downward thereby increasing the overbite. This form of development does not allow for enough clearance in the posterior region to facilitate sufficient vertical growth of the alveolar processes during eruption of the accessional teeth.* Serial observations therefore suggest the revision of the contention that incisal overbite should depend upon the amount of eruption of the permanent molars. Therapeutical experience teaches also that a deep overbite cannot be decreased permanently by a proper vertical opening of the bite without a sagittal component. Physiologically this consists in the forward growth of the mandibular alveolar process and not in a mesial displacement of the mandible.

"A parallel phenomenon to the tendency toward an increased overbite in the ontogenetic development is well known in the phylogenetic history. Among prehistoric and historic skulls of men of northern Europe incisal overlapping is seldom found. Its incidence increased progressively with the beginning of the fifteenth century and became the orderly form of modern man. A significant reduction in mandibular arch length became concomitant.

"The present data may serve as a warning against the recent trend in the field of orthodontics to remove permanent teeth in the mandibular arch, without

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"*The downward growth of the roots into the corpus mandibulae of some lower already occluding first permanent molars in the report of Carlson may find an explanation in a deep incisal overbite."

considering its effect on the incisal overbite. It does not agree with the attempt to justify extractions by comparative measurements of the widths of the deciduous molars and their unerupted successors. That procedure doesn't take into account the possibility of a physiological forward growth concomitant with the eruption of successional teeth.

"Models alone naturally are not sufficient to demonstrate the role of growth of the mandible upon the development of overbite. These and the other data, however, seem to confirm the concept that the alignment of the teeth and the development of the alveolar processes follow along lines not identical with the growth rate of the other parts of the jaws. When, during the transition into the mixed dentition, the overbite became more or less pronounced or even a disto- or mesioclusion was produced, no distal or mesial shift of the mandible could be observed. The mesiodistal relationship of the opposing deciduous canines remained constant."

"SUMMARY"

"In a survey of 52 cases the development of overbite was studied. The following summarizes the findings.

"1. The degree of incisal overbite in the permanent dentition primarily was determined by the extent of mandibular forward growth which occurred during the eruption of the successional teeth. The lessened forward extent of the mandibular arch was responsible for a greater incidence of severe overbite in the mixed dentures.

"2. The deciduous overbite was also a determining factor in that the slight overbite tended to increase during the period of the mixed dentition while a severe overbite became worse.

"3. The definite overbite of the permanent dentition finally depended upon the eruption sequence of the permanent canines and premolars. If in the lower arch the sequence was canine, first premolar, second premolar and in the upper arch first premolar, canine and second premolar, the best results were observed.

"4. Incisal overbite developed independently of the mechanism of molar adjustment."

"GENERAL CONCLUSIONS

(Including Papers I to III of this series)"

"A biometrical study of the development of the dental arches and occlusion in 60 children revealed the occurrence of several physiological mechanisms which influenced the final position of the teeth.

"1. Considerable migration of the teeth *concomitant* with the eruption of accessional and successional teeth was observed to effect the increase in dimensions of the arches. Teeth and alveolar process thus are a genetic entity.

"2. Observations made in this study endorse Brodie's principal concept that the development of the dentition is mainly based upon a congenital pattern. This pattern predetermines the spaced or closed arrangement of the deciduous arches and the positioning of the permanent tooth germs which seem to be of greater significance than function.

"3. Differentiation between the manifestation of the general growth of the facial skeleton and that of the alveolar processes is conducive to a better understanding of the etiology of malocclusion and the development of certain paradentopathies.

"4. Successful methods for preventive treatment may be instituted as a result of a thorough knowledge of the physiological migration of the teeth."

News and Notes

Dr. James D. McCoy Honored

The Ketcham award conferred each year to an individual for outstanding contributions to orthodontic science and progress will this year go to the Pacific Coast.

The Ketcham Award Committee named James D. McCoy, of Beverly Hills, Calif., as the recipient for 1952.

Dr. McCoy is a past-president of the American Association of Orthodontists, teacher, author, and for years sectional editor of the Pacific Coast Society for the AMERICAN JOURNAL OF ORTHODONTICS.

The award will be conferred in St. Louis, Mo., in April, at the meeting of the American Association.

1952 Meeting of the American Association of Orthodontists

The 1952 meeting of the American Association of Orthodontists will be held at the Jefferson Hotel in St. Louis, Mo., April 21 to 24, 1952.

The program committee has prepared a scientific program which is designed to present the present-day thoughts and beliefs in all phases of orthodontics. Well-known authorities will analyze and evaluate accepted methods of orthodontic procedures and will present the latest information and knowledge of interest to the orthodontic specialty.

Scientific papers and discussions will be presented by the following persons:

Dr. Wilton Marion Krogman
Dr. Edward R. Strayer
Dr. Charles Tweed
Dr. Wendell L. Wylie
Dr. Allan G. Brodie
Dr. Joseph E. Johnson
Dr. Silas J. Kloehn
Dr. Walter J. Sly
Dr. Oren A. Oliver
Dr. Robert E. Moyers
Dr. G. Vernon Fisk
Dr. D. Harvey Jenkins
Dr. Holly Halderson

A half-day session, conducted by the research committee, will consist of reports of research projects and the presentation of the Prize Award Essay which will be awarded by this committee.

Another half-day session will be devoted to the presentation of selected and outstanding clinics by members of the Association.

Local arrangements for the convenience and pleasure of members and guests are being arranged by a very efficient committee of St. Louis members. While there will, no doubt, be adequate hotel accommodations for all who attend the meeting, a large attendance is anticipated and, in order to avoid possible disappointment, reservations should be made as soon as possible.

PROGRAM COMMITTEE,
L. BODINE HIGLEY,
ERNEST L. JOHNSON,
SILAS J. KLOEHN,
LOWRIE J. PORTER,
MAX E. ERNST, CHAIRMAN.

Dr. Bernard G. DeVries, President of the American Association of Orthodontists, met on Sunday, December 3, with the general chairman and all chairmen of local committees appointed for the meeting to be held in St. Louis April 21 to April 24, 1952, at the Jefferson Hotel.

The program was outlined by the President, all committee chairmen were briefed on their duties for the meeting, and it is hoped that the St. Louis meeting is off to a flying start.

It was pointed out at the meeting Sunday that it would be desirable for all those who expect to attend the meeting in April, and who live in foreign countries, to notify promptly the chairman of the Press Relations Committee, Dr. Henry F. Westhoff, Missouri Theater Bldg., St. Louis, Mo.

Orthodontists who expect to attend the meeting are asked to make reservations directly with the Hotel Jefferson, St. Louis, Mo. It is urgent and to your advantage to make your reservations early.

RESERVATION COMMITTEE,
J. E. ROOK, CHAIRMAN.

The following local committees have been named to make the arrangements for the meeting:

Local Arrangements

Leo M. Shanley, Chairman, 7800 Maryland Ave., St. Louis, Mo.		E. V. Holestine, Secretary-Treasurer, 8015 Maryland Ave., St. Louis, Mo.
Otto W. Brandhorst	4952 Maryland Ave.	St. Louis, Mo.
George H. Herbert	7002 Pershing Ave.	St. Louis, Mo.
Benno E. Lischer	313 N. Rock Hill Road	Webster Groves, Mo.
Albert C. Mogler	462 N. Taylor Ave.	St. Louis, Mo.
H. C. Pollock	8015 Maryland Ave.	St. Louis, Mo.
Frank C. Rodgers	Missouri Theatre Bldg.	St. Louis, Mo.
Henry F. Westhoff	Missouri Theatre Bldg.	St. Louis, Mo.
Joseph H. Williams	3722 Washington Blvd.	St. Louis, Mo.

Stag Dinner

Joseph H. Williams, Chairman	3722 Washington Blvd.	St. Louis, Mo.
Robert E. Bedell	1504 S. Grand Ave.	St. Louis, Mo.
Carl L. Rister	University Club Bldg.	St. Louis, Mo.
George Herbert	7002 Pershing Ave.	St. Louis, Mo.

Ladies' Entertainment

Earl C. Bean, Chairman	120 N. Forsythe Blvd.	St. Louis, Mo.

Co-Chairmen

Mrs. B. G. deVries		
Mrs. H. C. Pollock	40 Fair Oaks	St. Louis, Mo.
Mrs. Otto W. Brandhorst	160 S. Gore Ave.	Webster Groves, Mo.
Mrs. Joseph H. Williams	24 S. Gore Ave.	Webster Groves, Mo.
Mrs. Leo M. Shanley	5 Glen Forest	St. Louis, Mo.

Press

H. F. Westhoff, Chairman	Missouri Theatre Bldg.	St. Louis, Mo.
H. C. Pollock	8015 Maryland Ave.	St. Louis, Mo.

Banquet and Luncheons

Virgil A. Kimmey, Chairman	3722 Washington Blvd.	St. Louis, Mo.
Robert E. Hennessy	8013 Maryland Ave.	St. Louis, Mo.
Robert C. Byrne	2602 S. Grand Ave.	St. Louis, Mo.

	Clinics	
Otto W. Brandhorst, Chairman	4952 Maryland Ave.	St. Louis, Mo.
Virgil A. Kimmey	3722 Washington Blvd.	St. Louis, Mo.
J. E. Rook	6651 Enright Ave.	St. Louis, Mo.
	Registration	
George Moore, Chairman	Box 8	Ann Arbor, Mich.
John Byrne, Co-Chairman	2602 S. Grand Ave.	St. Louis, Mo.
	Commercial Exhibits	
Earl E. Shepard, Chairman	4500 Olive St.	St. Louis, Mo.
William S. Brandhorst	4952 Maryland Ave.	St. Louis, Mo.
Fred Fabric	4559 Scott Ave.	St. Louis, Mo.
	Hosts	
Leo B. Lundergan, Chairman	4500 Olive St.	St. Louis, Mo.
Robert M. Courtney	University Club Bldg.	St. Louis, Mo.
Kenneth C. Marshall	35 N. Central	St. Louis, Mo.
Quentin M. Ringenberg	3722 Washington Blvd.	St. Louis, Mo.
	Property	
A. C. Mogler, Chairman	462 N. Taylor	St. Louis, Mo.
Paul E. Spoeneman	16 Hampton Village Plaza	St. Louis, Mo.
E. W. Hodgson	Missouri Theatre Bldg.	St. Louis, Mo.
	Reception	
H. C. Pollock, Chairman	8015 Maryland Ave.	St. Louis, Mo.
Benno Lischer	313 N. Rock Hill Road	Webster Groves, Mo.
Frank C. Rodgers	Missouri Theatre Bldg.	St. Louis, Mo.
Joseph Williams	3722 Washington Blvd.	St. Louis, Mo.
Otto W. Brandhorst	4952 Maryland Ave.	St. Louis, Mo.
	Hotel Reservations	
J. E. Rook, Chairman	6651 Enright	St. Louis, Mo.
H. C. Pollock, Jr.	8015 Maryland Ave.	St. Louis, Mo.
	Information	
George Herbert, Chairman	7002 Pershing Ave.	St. Louis, Mo.
Clarence R. Geier	3417 Meramec Ave.	St. Louis, Mo.
Everett W. Bedell	1504 S. Grand	St. Louis, Mo.

American Board of Orthodontics

The next meeting of the American Board of Orthodontics will be held at the Hotel Jefferson, St. Louis, Mo., April 16 to April 20, 1952. Orthodontists who desire to be certified by the Board may obtain application blanks from the Secretary, Dr. C. Edward Martinek, 661 Fisher Bldg., Detroit 2, Mich. To be considered at the St. Louis meeting, all applications must be filed before March 1, 1952.

Research Section Meeting of the American Association of Orthodontists

In accordance with the policy of recent years, time will be set aside for research reports at the coming meeting of the American Association of Orthodontists. Any individual desiring to report on a current research problem, completed or in progress, may do so by communicating with Dr. John R. Thompson, 311 East Chicago Ave., Chicago, Ill.

Each application should be accompanied by the author's name, address, and institution with which he works, if any. An abstract of not more than three hundred words should be forwarded at the same time. The abstracts must be in the hands of the committee not later than March 15, 1952.

Presentation time will be limited to ten minutes.

J. A. SALZMANN, Chairman.

Prize Essay Contest, American Association of Orthodontists

Eligibility.—Any member of the American Association of Orthodontists; any person affiliated with a recognized institution in the field of dentistry as a teacher, researcher, undergraduate or graduate student shall be eligible to enter the competition.

Character of Essay.—Each essay submitted must represent an original investigation and contain some new significant material of value to the art or science of orthodontics.

Prize.—A cash prize of $500 is offered for the essay judged to be the winner. The committee, however, reserves the right to omit the award if in its judgment none of the entries is considered to be worthy. Honorable mention will be awarded to those authors taking second and third places. The first three papers will become the property of the American Association of Orthodontists and will be published. All other essays will be returned.

Specifications.—All essays must be typewritten on 8½ by 11 inch white paper, double-spaced with 1 inch margins, and composed in good English. Three copies of each paper, complete with illustrations, bibliography, tables, and charts must be submitted. The name and address of the author must not appear in the essay. For purposes of identification, the author's name, together with a brief biographical sketch which sets forth his or her dental and/or orthodontic training, present activity and status (practitioner, teacher, student, research worker, etc.), should be typed on a separate sheet of paper and enclosed in a sealed envelope. The envelope should carry the title of the essay.

Presentation.—The author of the winning essay will be invited to present it at the meeting of the American Association of Orthodontists to be held at St. Louis, Mo., April 21-24, 1952.

Final Submission Date.—No essay will be considered for this competition unless received in triplicate by the Chairman of the Research Committee on or before March 1, 1951.

J. A. SALZMANN, CHAIRMAN, RESEARCH COMMITTEE,
AMERICAN ASSOCIATION OF ORTHODONTISTS,
654 MADISON AVE.,
NEW YORK 21, N. Y.

Central Section of the American Association of Orthodontists

The following are the newly elected officers of the Central Section of the American Association of Orthodontists:

President, Paul G. Ludwick.....Lincoln, Neb.
President-Elect, G. H. Williams.....Chicago, Ill.
Vice-President, Earl E. Shepard.....St. Louis, Mo.
Secretary-Treasurer, Frederick B. Lehman.....Cedar Rapids, Ia.
Representative to the Board of Directors, A.A.O., Cecil Muller.....Omaha, Neb.
Alternate, S. J. Kloehn.....Appleton, Wis.
Sectional Editor, Charles R. Baker.....Evanston, Ill.
Board of Censors (New Member), Henry E. Colby.....Minneapolis, Minn.
Publication Board (New Member), Joseph O. Baker.....St. Paul, Minn.
Judicial Council (New Member), Arthur C. Rohde.....Milwaukee, Wis.

Middle Atlantic Society of Orthodontists Holds First Meeting

The first meeting of the Middle Atlantic Society of Orthodontists was held on Sunday afternoon, Nov. 11, 1951, at the Warwick Hotel, Philadelphia. This society was authorized at the Louisville meeting of the American Association of Orthodontists as a sectional component. The geographical boundaries and membership qualifications were, at that time, set up as follows:

> The society will include members practicing in New Jersey, Delaware, Maryland, the District of Columbia, and Pennsylvania—east of the Alleghany Mountains. Present members of the Northeastern and Southern Societies may retain their membership in those organizations. Previously nonaffiliated orthodontists residing within the above boundaries must make application to the Middle Atlantic with the exception of those residing in areas closely adjoining other societies. In these special cases permission may be granted by the A.A.O. for membership in the adjacent Society.

The following members were present at the Philadelphia meeting:

New Jersey: A. L. Ackerman, W. A. Giblin, S. D. Gosman, H. E. Jaggard, B. Kniberg, E. Rosenast, R. Sheridan, G. A. Devlin, C. Whitman, and A. Wolfson.

Washington, D. C.: B. E. Erikson, S. Hopkins, B. Lloyd, F. Murray, E. J. Copping, R. Splain, and P. Bauman.

Maryland: G. M. Anderson, H. L. Johnston, S. Moore, D. Shehan, E. W. Swinehart, R. Swinehart, and R. K. Tongue.

Pennsylvania: H. K. Cooper, A. F. Jackson, F. Nash, S. L. Nyce, C. Patton, P. Reid, A. P. Sager, R. T. Scull, C. W. Volckmer, and L. Yerkes.

All those who join and pay their dues prior to March 1, 1952, will be considered as charter members.

Election of officers resulted as follows:

> President, George M. Anderson
> President-Elect, Charles H. Patton
> Vice-President, Ray Sheridan
> Secretary-Treasurer, Gerard A. Devlin
> Editor, Stephen C. Hopkins
> Director, Emil Rosenast
> Alternate Director, B. E. Erikson
> Board of Censors, Earl Swinehart elected for three years, Andrew Jackson elected for two years, A. Wolfson elected for one year.

The next meeting of the Society is scheduled for May 19, 1952, at the Warwick Hotel in Philadelphia.

Rocky Mountain Society of Orthodontists

The annual fall meeting of the Rocky Mountain Society of Orthodontists was held in Denver, Colo., on November 5 and 6.

The following men were elected to offices for the coming year:

> President, Dr. Curtis E. Burson, 1232 Republic Bldg., Denver 2, Colo.
> Vice-President, Dr. Kenneth R. Johnson, 311 E. Pikes Peak Ave., Colorado Springs, Colo.
> Secretary-Treasurer, Dr. Don V. Benkendorf, 932 Metropolitan Bldg., Denver 2, Colo.
> Sectional Editor, Dr. Henry F. Hoffman, 932 Metropolitan Bldg., Denver 2, Colo.
> Delegate to A. A. O., Dr. Henry F. Hoffman, 932 Metropolitan Bldg., Denver 2, Colo.
> Alternate to A. A. O., Dr. J. Lyndon Carman 501 Republic Bldg., Denver 2, Colo.

Northeastern Society of Orthodontists

The annual meeting of the Northeastern Society of Orthodontists will be held at the Hotel Commodore, New York, N. Y., on March 3 and 4, 1952.

Southwestern Society of Orthodontists

At the thirty-first annual session of the Southwestern Society of Orthodontists, held at Houston, Texas, October 28 to 31, the following officers were installed:

President, Dan C. Peavy, 745 Milam Bldg., San Antonio, Texas.
President-Elect, Clarence W. Koch, 817 Donaghey Bldg., Little Rock, Ark.
Vice-President, Marion A. Flesher, 806 Medical Arts Bldg., Oklahoma City, Okla.
Secretary-Treasurer, Fred A. Boyd, 1502 North Third St., Abilene, Texas.

H. D. Harper, 916 Medical Arts Bldg., Shreveport, La., was elected Director to the A. A. O., and W. B. Stevenson, Sr., 918 First Medical and Professional Bldg., Amarillo, Texas, Alternate.

W. E. Flesher, Sr., was elected Sectional Editor from the Southwestern Society.

The following men were elected to membership in the Society:

Harold S. Born, 908 S. Johnstone Ave., Bartlesville, Okla.
E. L. Mooney, Medical Arts Bldg., Houston, Texas
Gilbert F. Stuller, 604 S. Buchanan St., Lafayette, La.
Kent Jones, Medical Arts Bldg., Fort Worth, Texas
James E. Makins, Myrick Bldg., Lubbock, Texas
Howard H. Dukes, Brotherhood Bldg., Kansas City, Kan.
W. Kenneth Orman, 3722 Garnet St., Houston, Texas

Chicago Association of Orthodontists

The following is the program of the Chicago Association of Orthodontists for the years 1951 and 1952:

Nov. 26, 1951, Monday Evening

BISMARCK HOTEL—Third Floor

Orthodontics and Endocrinology. Emery G. Grimm, M.D., Professor of Endocrinology, Northwestern University.

Jan. 28, 1952, Monday Evening

BISMARCK HOTEL—Third Floor

The Function of the Chin. E. Lloyd DuBrul, D.D.S., M.S., Assistant Professor of Oral Anatomy, University of Illinois.

March 31, 1952, Monday Evening

BISMARCK HOTEL—Third Floor

Posttreatment-Post Mortems. Dr. Charles R. Baker, Howard J. Buchner, Charles H. Rushing, and Robert F. Schoenwetter.

April 28, 1952, Monday Evening

BISMARCK HOTEL—Third Floor

Peridontal Care During Orthodontic Treatment. Gordon D. Howard, D.D.S., M.A., Assistant Professor of Periodontia, Northwestern University.

American Academy of Oral Pathology

The American Academy of Oral Pathology will hold its annual meeting in Chicago, at the Stevens Hotel, on Feb. 4, 1952.

The following program will be presented:

Histopathology of Various Gingival Enlargements. Sigmund Ramfjord, University of Michigan.

A Discussion of Dental Anomalies. Myron Aisenberg, University of Baltimore.
Dermatological Diseases Affecting the Oral Cavity. Lester Cahn, Columbia University.
Physiology of Bone. Lent Johnson, Armed Forces Institute of Pathology.
Bone Behavior in Periodontal Disease. Joseph P. Weinmann, University of Illinois.
A Study of Oral Carcinoma. Joseph L. Bernier, Armed Forces Institute of Pathology.

This is not a closed meeting and all interested dentists are invited to attend this program of the American Academy of Oral Pathology.

H. B. G. ROBINSON, PUBLICITY CHAIRMAN.

Notes of Interest

Dr. O. I. Civen wishes to announce that he is limiting his practice to orthodontics at 100 Boylston St., Boston, Mass., and at 1077 Blue Hill Ave., Dorchester, Mass.

H. V. Davenport, D.D.S., announces the opening of his office for the practice of orthodontics at 18 Hollar Bldg., Hickory, N. C.

Joseph Lawson Johnson, D.D.S., announces that after Jan. 1, 1952, his practice will be limited to orthodontics exclusively at 71 Bull St., Charleston, S. C.

Doyle J. Smith, D.D.S., announces the removal of his offices from the Sterick Bldg. to 1399 Madison Ave., Memphis, Tenn., practice limited to orthodontics.

Arthur I. Thomas, D.D.S., announces the opening of his office at 65 West St., Danbury, Conn., practice limited to orthodontics.

Announcement to Future Essayists

AT THE annual session of the American Association of Orthodontists in Louisville the following recommendations of the Publication and Editorial Board were adopted and are now official:

1. That many valuable articles are lost for publication because they were not prepared for such.
2. Authors expecting to have published, without expense, a profusion of illustrations impose a difficult task upon the editorial staff.
3. That the A.A.O. should adopt official instructions for essayists, including all constituent societies, as to the manner in which their manuscripts should be prepared for publication first and for presentation second.

The contract between the American Association of Orthodontists and the C. V. Mosby Company includes a stipulated sum to be spent for the illustrations of acceptable articles for publication. Any excesses of this budget must be paid out of the treasury of the A.A.O. and may become dangerously expensive.

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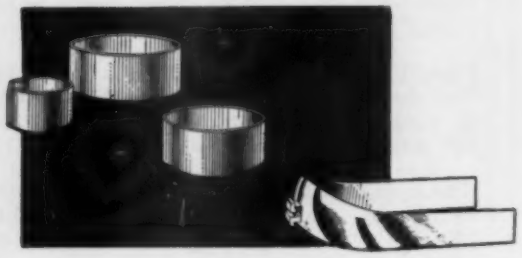

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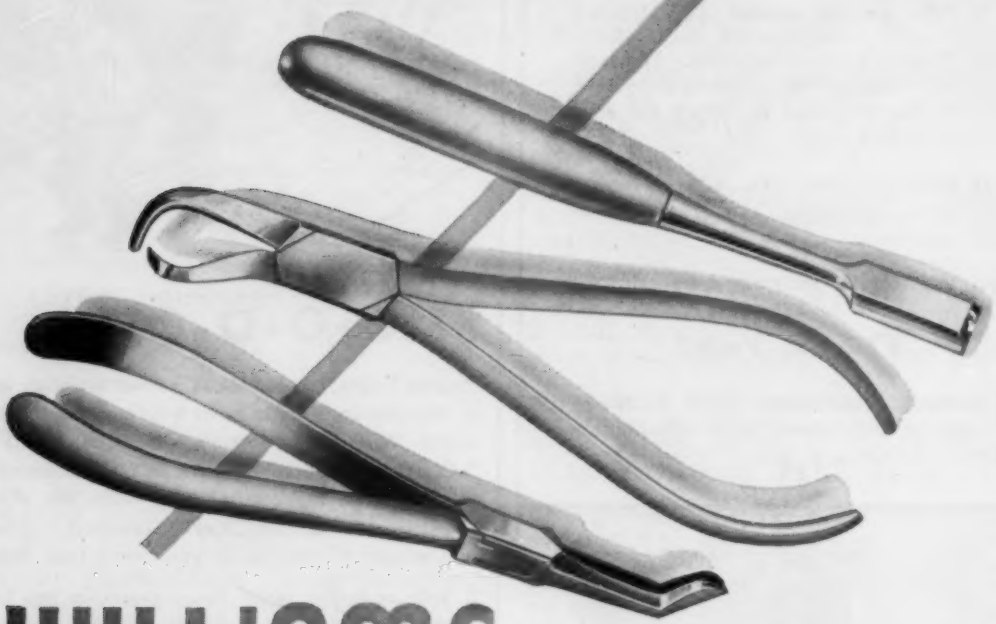

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